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People and the Sound

A PLAN FOR LONG ISLAND SOUND

Summary

New England River Basins Commission

The Long Island Sound Regional Study is a "level B water and related land resources study." It was conducted under provisions of the federal Water Resources Planning Act of 1965. The Plan which has been developed was prepared by a team of federal, state, and regional officials, local citizens, and the scientific community, under the overall coordination of the New England River Basins Commission. It is a part of the Commission's comprehensive, coordinated joint plan for the water and related land resources of its region, which includes New England and the New York portions of Long Island Sound.

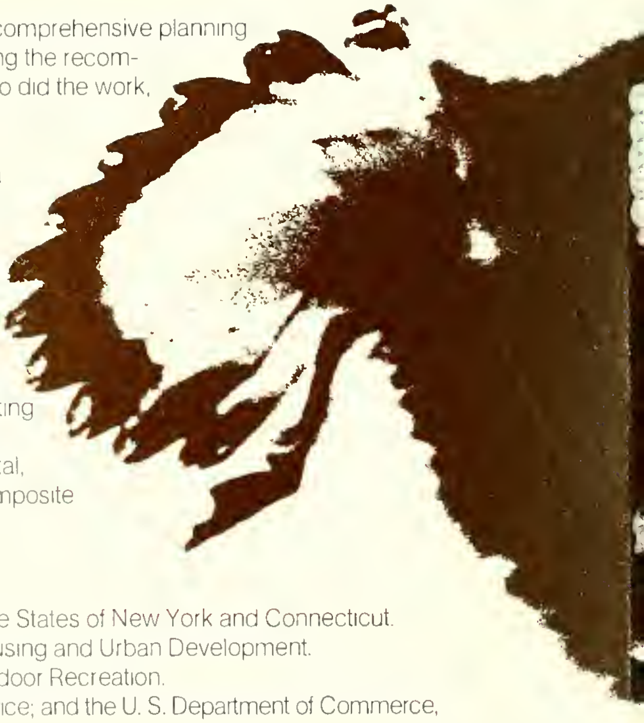
The plan for Long Island Sound recommends a program for action by federal, state, and local governments; it does not bind them to undertake specific recommended actions. To assist in the evaluation and implementation process, the following reports have been prepared:

A PLAN FOR LONG ISLAND SOUND: A SUMMARY. Highlights of the plan and a brief discussion of the rationale leading to recommendations.

A PLAN FOR LONG ISLAND SOUND: SUPPLEMENT. A more comprehensive planning document which enumerates the major alternatives considered in formulating the recommendations, together with an explanation of how the plan was prepared, who did the work, and background information organized both by subject matter and by geographical sub-regions of the Study Area.

PLANNING REPORTS. Each planning report was developed by a "Work Group," chaired by a federal agency, with the active participation of state and local agencies, other federal agencies and citizen and scientific advisors. These reports incorporate data (originally published in a series of Interim Reports) which estimate people's demands for the resources of the Sound region, the requirements needed to meet those demands, the existing capacity of the region to meet the requirements, and any deficiencies noted.

The second half of each planning report develops solutions by stating objectives in terms of satisfying defined needs, suggesting alternative ways to achieve the objective, evaluating each alternative in terms of environmental, economic, and social criteria, developing economic, environmental, and composite plans, and finally making recommendations.



The following Planning Reports were prepared.

Water Management by the U. S. Environmental Protection Agency, and the States of New York and Connecticut.

Land Use by Ralph M. Field and Associates for the U. S. Department of Housing and Urban Development.

Outdoor Recreation by the U. S. Department of the Interior, Bureau of Outdoor Recreation.

Fish and Wildlife by the U. S. Department of the Interior, Fish and Wildlife Service; and the U. S. Department of Commerce, National Marine Fisheries Service.

Shoreline Appearance and Design by the U. S. Department of the Interior, National Park Service and Roy Mann and Associates.

Marine Transportation by the U. S. Department of the Army, Corps of Engineers.

Power and the Environment by Federal Power Commission staff.

Mineral Resources and Mining by the U. S. Department of the Interior, Bureau of Mines.

Flood Damage Reduction by the U. S. Department of the Army, Corps of Engineers; and the U. S. Department of Agriculture, Soil Conservation Service.

Erosion and Sedimentation by the U. S. Department of the Army, Corps of Engineers; and the U. S. Department of Agriculture, Soil Conservation Service.

OTHER REPORTS published in conjunction with the Study are:

An Economic Perspective by the U. S. Department of Agriculture, Economic Research Service; and the U. S. Department of Commerce, Bureau of Economic Analysis. An examination of the economic and demographic trends in the region, with data for use as the basis of all projections made in the Study.

Shoreline Appearance and Design: A Planning Handbook by Roy Mann Associates, Inc., for the U. S. Department of the Interior, National Park Service. Recommended management procedures for protecting and enhancing the region's scenic resources.

Sources and Movement of Water by the U. S. Geological Survey, Water Resources Division; and the National Oceanic and Atmospheric Administration. A summary of the hydrology and climate of the region.

Soils by the U. S. Department of Agriculture, Soil Conservation Service. An inventory and analysis of soil composition in the region.

For a complete listing of reports published by or in conjunction with the Study, see Appendix A of the Supplement. Copies of these reports are available from:

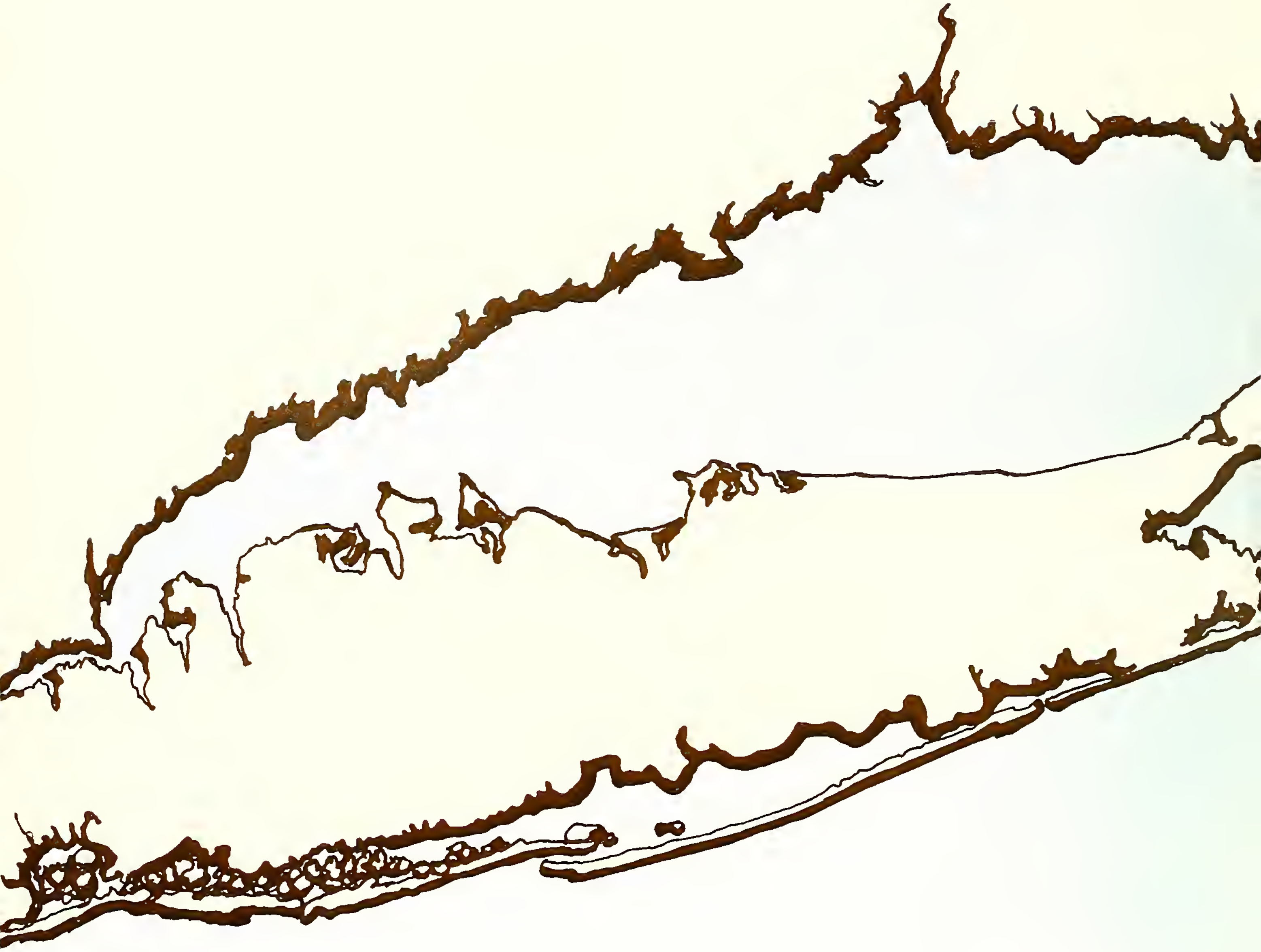
New England River Basins Commission
55 Court Street
Boston, Mass. 02108

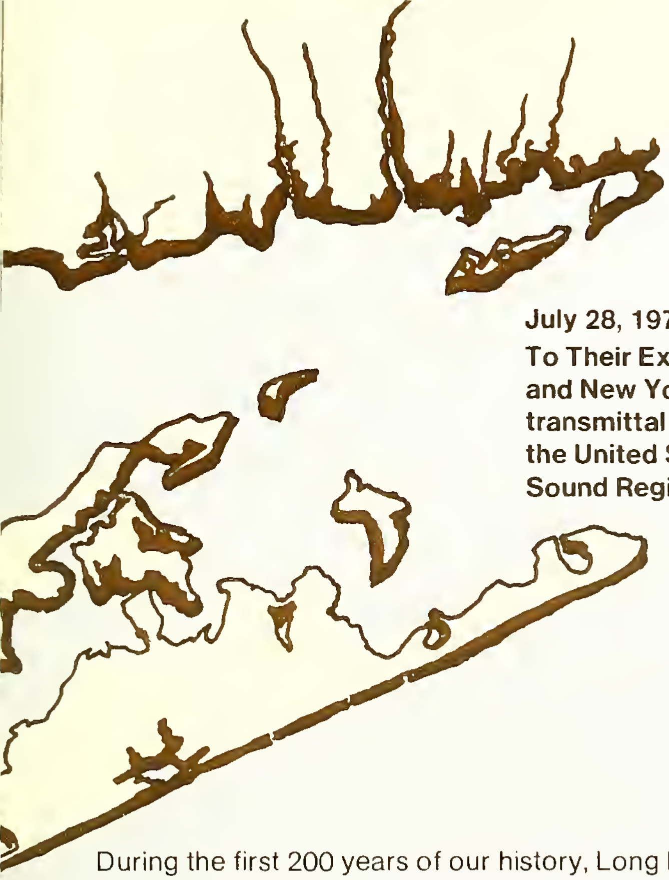
National Technical Information Service
Springfield, Va. 22151

A Plan for Long Island Sound

Volume 1, Summary

Final report of the Long Island Sound Regional Study, New England River Basins Commission, July, 1975.
Volume 1, Summary. Volume 2, Supplement.





July 28, 1975

To Their Excellencies, the Governors of Connecticut and New York; to the Water Resources Council for transmittal to the Congress through the President of the United States; to the people of the Long Island Sound Region:

During the first 200 years of our history, Long Island Sound has had an important role in the development of this part of the nation. In the years to come, it will have a changing, but no less important part to play. Action to implement the broad strategy and many of the specific recommendations of this plan, I am convinced, is absolutely necessary if the Sound is to meet its vast potential for improving the quality of our lives and those of future generations.

The plan recommends actions to clean up the waters of the Sound, open its shores to greatly increased recreation, improve fishing, protect natural areas, reduce flood damage, increase ferry services, redevelop rundown urban waterfronts--in short, enhance the Sound's usefulness to the millions of people who live around it, without exceeding the capabilities of its natural systems. The plan stresses environmental quality in ways that will also encourage the development and continuation of a healthy economy.

The plan is also a model for managing a unique body of water surrounded by intense human activity. It recognizes the many ongoing federal, state, and local programs and it proposes the next steps to solve problems and to meet goals using existing institutions in challenging and in some innovative ways.

It represents the diligent labor of the more than 250 individuals who participated directly, and the counsel of hundreds who offered comments, suggestions, and criticism. Naturally, not all of the participants concur with every recommendation. To the degree possible, these differences have been indicated either with the recommendation or in the Comments Section of the *Supplement*. Nonetheless, the plan does represent to an extraordinary degree a consensus of those who have participated.

On behalf of all who helped produce it, I am proud to present the Long Island Sound Regional Study report for your consideration and I urge that it be given meaning by prompt implementing action.

Respectfully submitted,

R. Frank Gregg

R. Frank Gregg, Chairman
New England River Basins Commission

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FOREWORD

The Long Island Sound Regional Study came about because people around the Sound were alarmed by what they saw happening to this unique body of water. While there had been several proposals to study the Sound in the mid-1960's, this Study got underway at about the time of Earth Day, 1970. It was the highpoint of America's concern for the conflicts between man's activities and the natural environment. It was completed five years later, on the eve of the nation's 200th birthday.

Much has occurred during those years. What was then an apparently healthy economy has plummeted into one of our worst recessions. Now we are questioning our ability to pay for the solutions to our Earth Day concerns. A quadrupling of the price of oil has put a kink in those energy demand growth curves we once thought would never go anywhere but up. Water clean-up programs which were stalled or unheard of then, are today helping to reverse pollution in the Sound, and will do much more tomorrow.

In short, the plan for Long Island Sound has been developed in a real and constantly changing world.

The plan summarizes what we know about the water, lands, biology, and people of the region. And it sets forth ways to reclaim the Sound. . . to finish cleaning up its waters, create new parks and beaches, improve fishing, reduce flood damage, start new ferry services, consolidate the gains we've made in controlling our insatiable appetite for energy, even slow our land-eating sprawl development, which has created so many problems for the Sound.

Most important of all, the plan suggests a way to get it all together, so that ordinary citizens can have the kind of a Sound they want.

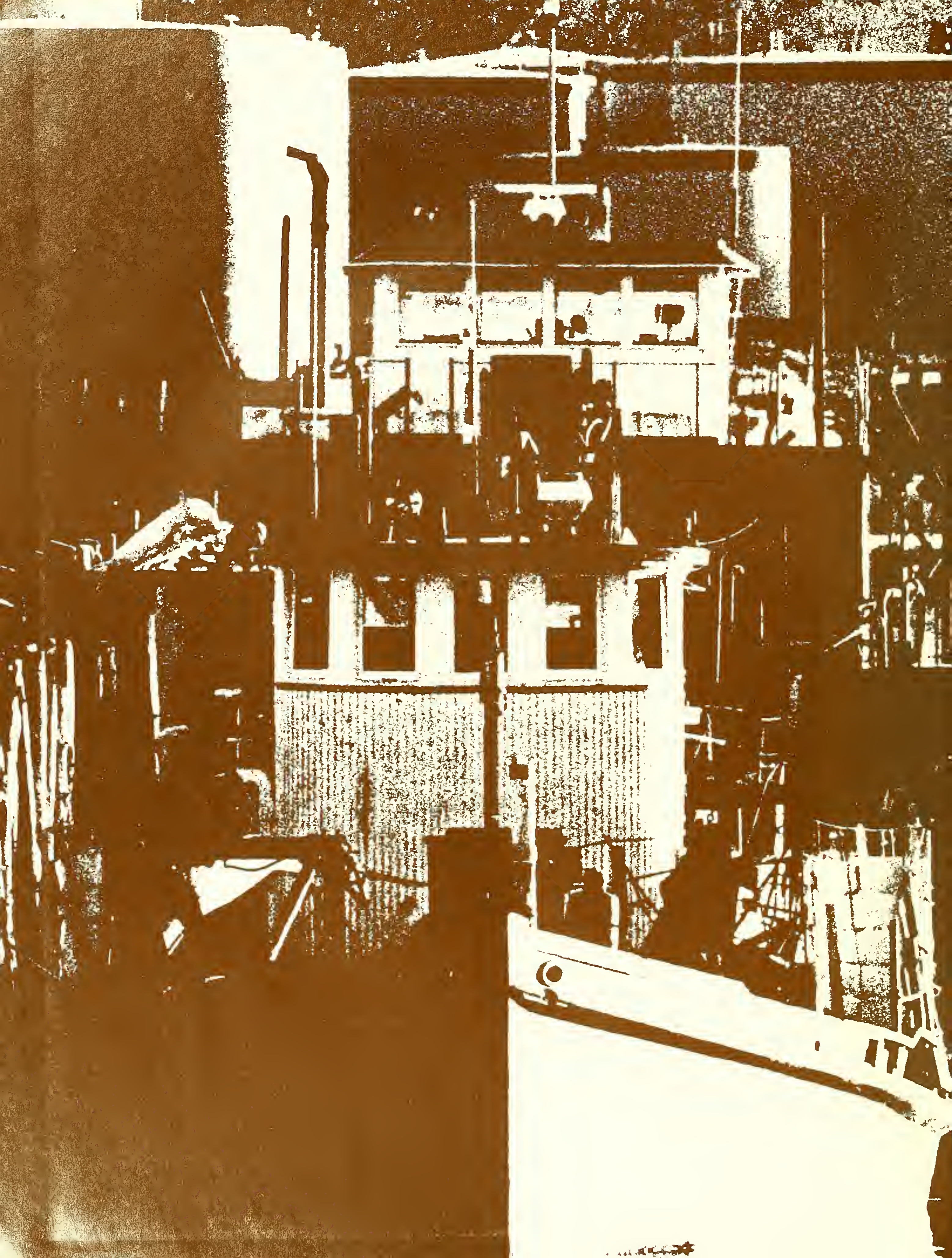
To prepare this plan for Long Island Sound, the New England River Basins Commission organized federal, state, and regional officials, citizens of the region, the scientific community, and local interests into a study team representing many disciplines and points of view. They are listed on the inside back cover of this summary.

Never before had such a diverse group, with so much authority to make things happen around the Sound, come together to take a comprehensive look at the Sound as a whole.

Because of their diversity, it was inevitable that disagreements should arise. And, for the most part, it was a case of people with honest differences agreeing to disagree. Where it occurs throughout the plan, an attempt has been made to note it.

But, to a surprising degree, the plan represents consensus.

Many reports were produced. Their content and availability are described on the front cover of this summary. The major recommendations of the plan, how they should be implemented, and by whom, follow.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HIGHLIGHTS

THE PLAN FOR LONG ISLAND SOUND

1 THERE IS NO ONE VOICE TO SPEAK FOR LONG ISLAND SOUND

In 1970, Congress asked the New England River Basins Commission to look into the problems of Long Island Sound because no single identifiable agency or group spoke for the Sound or the needs of the people living around it For the first time in history, federal, state, and local officials, as well as literally thousands of interested citizens came together to examine the problems of this unique body of water and to make recommendations to solve them

On June 30, 1975, the New England River Basins Commission's Long Island Sound Study will be completed and the Sound will once again be without a spokesman The Sound can be managed But something is needed to keep the plan and the spirit of cooperation that spawned it alive The governors of both states have indicated their desire to do this An Interim Long Island Sound Action Program should be established now by both Connecticut and New York, to follow up on the recommendations of the Long Island Sound Study to stimulate needed research and update the plan in the light of new information, to build public understanding and support for the need to manage the Sound, and to discourage major public and private development projects adversely effecting the Sound

NEXT STEPS·

☐ **Establish an interim action program.** Both states acting together should establish an interim program as a part of their coastal zone management planning ("305") program and use a portion of the funds received from the federal Office of Coastal Zone Management to support its staff and activities Local officials, federal and interstate agencies, and interested citizens, like those on the Long Island Sound Study's Citizen Advisory Committee, should be actively involved Unless the Sound has a visible and local spokesman, the work of the study and the concern of the thousands who participated in it may have been for nothing

☐ **Develop a long term mechanism** as part of each state s coastal zone management ("306") program to provide the "voice" and provide better shoreline management See Highlight 2, following

2 BETTER SHORELINE MANAGEMENT IS THE KEY TO SAVING THE SOUND.

More than 200 governments make decisions about the future of the Sound and its shoreline every day They have many effective planning, management, and regulatory programs underway But right now, there is no adequate way for these governments to discuss issues affecting them, and to integrate programs, *before one of them takes some irrevocable* action The result has too often been haphazard development that pollutes the Sound and clutters its shores The dangers of hurricanes, floods, and erosion have frequently been ignored And people's access to this great resource has been inexorably reduced year after year Unless we find a more unified vision, a more consistent and integrated approach to management of the Sound and its shoreline, nothing else we do to protect or improve the Sound will matter

NEXT STEPS:

☐ **Introduce legislation** in each state to meet the requirements of the federal Coastal Zone Management Act This should include a way to develop or modify local plans and regulations under state guidelines, with a system of permits to be issued for coastal development and conservation by groups of municipalities acting together

☐ **Submit state coastal zone management plans** to the federal Office of Coastal Zone Management as soon as possible for approval and ("306") funding

☐ **Establish a permanent Long Island Sound Management structure** as a part of each state s coastal zone management plan

DESIGN F I ROESON INC

3 GUIDE FUTURE GROWTH TO LAND CAPABLE OF SUPPORTING IT, SO THAT THE FIGHT TO SAVE THE SOUND IS NOT LOST ON THE LAND.

The question is not whether growth will or should continue It will What we urgently need are ways to guide growth around the Sound, to meet people's needs and, at the same time, respect the natural limitations of the land

NEXT STEPS:

☐ **Protect critical environmental areas** and the valuable open space remaining, as well as appropriate public access, with legislation in each state, either by regulation, as wetlands are now regulated, by purchase of development rights, as Suffolk County is now doing to preserve farm lands, or by outright purchase of the land The map on the other side identifies such opportunities

☐ **Concentrate future development** near existing transportation and water and sewer lines

☐ **Adopt good design standards** as a part of building and zoning regulations, with all levels of government and each state's Coastal Zone Management Program utilizing the study's Design Handbook

☐ **Reduce oil spills** by consolidating the number of ports on the Sound which receive petroleum products (see Highlight 8) and tighten ship-to-shore transfer regulations The Coast Guard should increase its enforcement of existing regulations and establish new tanker sea lanes Congress should enact a law requiring the licensing of key crew members The state legislatures should enact laws requiring spill containment equipment to be available ■

☐ **Ground water recharge** Nassau County, with financial assistance from the state and the U S Environmental Protection Agency, should vigorously pursue ground water recharge demonstration projects and followup programs to preserve both the quality and quantity of the ground water as its long-term supply source

4 WE'RE GAINING ON POLLUTION

The Sound's waters are getting cleaner, thanks to local, state, and federal clean-up programs But progress has been slow because until recently, federal money has been hard to come by Although a recent Supreme Court ruling effectively released about $9 billion nationwide for treatment facilities, the 1977 deadline for completion of the existing secondary treatment program here probably cannot be met And the hardest and most expensive tasks are still ahead reclaiming the waters close to New York City and in many of the major harbors, controlling many small oil spills and sewage from boats, and cleaning up stormwater runoff polluted by our streets and sewers before it reaches the Sound

Studies of these problems and how to solve them on a step-by-step basis are getting started in both states, through areawide waste treatment management planning ("208") programs Ultimately, the bill could run as high as $3 billion, with the federal and state governments paying more than 85 percent of some of these costs But unless we do it, we may never fully realize the benefits the Sound could provide to the millions of people around its shores

NEXT STEPS:

☐ **Begin additional areawide waste treatment management** ("208") planning by regional agencies, with support from the states and funding from the U S Environmental Protection Agency (EPA)

☐ **Construct additional facilities,** using federal ("201") funds from EPA together with state and local support and funding, so that no polluted storm or waste water reaches the Sound after 1985

☐ **Maintain very high water quality in pristine areas** of the Sound EPA should develop and adopt national guidelines and local and state governments should identify such pristine waters and prevent degradation there

☐ **Solve the special pollution problems** in the western Sound EPA should provide the funds, and New York State, New York City and the Interstate Sanitation Commission should conduct studies and recommend solutions by 1977

5 ACCESS TO THE SOUND IS SEVERELY RESTRICTED

Along the 600 miles of the Sound's shoreline there are only nine state parks--and only five of these are developed and open to the public What's worse, most of these parks are too far from our larger cities to be useful to the people who need them most This shortage has placed intolerable demands on the few areas open to the public, and many others which are not People who cannot see or reach the Sound to enjoy it cannot be expected to care about what happens to it or pay for its clean-up with their tax money The Sound must be opened up to provide more ways for more people, both city residents and suburbanites, to reach and enjoy it.

NEXT STEPS:

☐ **Create a Long Island Sound Heritage** through a special Congressional appropriation of $50 million to buy and develop fifteen shoreline sites for public recreation Each state legislature will have to appropriate its respective share of the total costs about $7 million in New York and $10 million in Connecticut State park agencies should buy and develop the facilities

☐ **Establish mini-parks** at the end of--or along--shoreline roads and other sites, about every five miles around the Sound--at more frequent intervals in more heavily populated areas--using state funds and federal Community Development Act grants State and local agencies should insure access to publicly owned or regulated shorelands, such as power and sewage treatment plants, wherever it is consistent with public safety

☐ **Establish a policy in each state to increase** public access Both state legislatures should declare it to be official state policy that the century-long trend of reduced public access be reversed State and local critical resource area programs should include provisions for public access

☐ **Expand existing local beaches** to better meet local needs Localities should acquire flood-prone areas which the study has identified and where appropriate, nourish their beaches with sand, using federal assistance programs

☐ **Expand and improve recreation facilities near large cities,** especially New York City, with state and federal cost-sharing assistance

☐ **Develop inland recreation** on more than 8,000 acres the study has identified State and local agencies, using Land and Water Conservation Funds, from the U S Bureau of Outdoor Recreation, should do this to divert some of the demand for recreation away from the Sound

6 THE SOUND IS MADE FOR FERRIES

But existing ferry service is slow, old, expensive, and limited The only alternative is a trip through New York City With bridge proposals out of favor and the cost of gasoline increasing, the prospect for better car and passenger ferry service is brightening An ongoing study of costs, routes, and feasibility by the Tri-State Planning Commission can provide a basis for government action Smaller, passenger-only ferries would provide an attractive means for getting people to shorefront and island recreation areas

NEXT STEPS

☐ **Commercial, year-round vehicle ferry service** across the Sound, between New Haven and Shoreham/Wading River, should be developed by New York and Connecticut, acting together Bids should be solicited from the private sector, and that bidder selected whose proposal results in the lowest operating cost to the states

☐ **Passenger ferry shuttles** between nine public recreation areas and urban transportation points should be developed or franchised by the parks and transportation agencies in each state, with assistance from the U S Department of Transportation

7 VALUABLE CITY WATERFRONTS LIE DECAYED AND FORGOTTEN

The Sound is no longer the area's chief route for shipping goods What is left are the decaying industrial waterfronts of another era Many of the businesses on this valuable waterfront no longer need to be there Often they form a wall between the Sound and those who have the least opportunity to enjoy it, the inner-city dwellers With the water getting cleaner, its time to begin a major facelift of the Sound's rundown waterfronts Using existing buildings if they are sound and tearing them down if they are not, we should convert the waterfront for residential, recreational, and water-related business and industrial use

NEXT STEPS:

☐ **Clean up harbor debris** of rotting piers and abandoned barges in Hempstead, New Haven, Bridgeport, Norwalk and Stamford by 1985, through programs conducted by the U S Army Corps of Engineers

☐ **Move non-water related industries inland.** Redevelop those vacated areas of the urban waterfront, and restore other areas, especially historic districts, through local community action, using federal Community Development Act funds, Coastal Zone Management demonstration grants, and state, local, and private money

☐ **Move oil storage tanks inland** through a long-term program of each state's Petroleum Receiving and Distribution Authority See Highlight 8

☐ **Guide development and redevelopment** through local use of the study's design handbook, *Shoreline Appearance and Design A Planning Handbook*

8 THE SOUND'S AGING TRANSPORTATION SYSTEM IS INEFFICIENT AND COSTLY TO MAINTAIN

Nearly all the oil used in Connecticut and Long Island is shipped in small coastal tankers or barges which unload at eighteen Sound ports The system increases oil spills, requires costly and otherwise unnecessary harbor dredging, and clogs valuable waterfront land with terminals and tanks And it increases the cost of oil. Oil should be received only at New London, New Haven, Bridgeport Port Jefferson, and Northville, and should be phased out of all other ports by 1990 Pipelines should be used for further distribution

NEXT STEPS:

☐ **Create a new Petroleum Receiving and Distribution Authority** in each State, by action of the legislatures, or direct an existing agency to

- Develop offshore tanker berths at New Haven and Port Jefferson by 1985 and Bridgeport by 1990
- Extend the Hollsville-Plainview Pipeline east to Northville and west to mid-Nassau County by 1980, extend a second line from New Haven to Hartford by 1990, and one from Bridgeport to the Bronx by 1995
- Add two new "hotlines" to move heavier oil between Middletown and New Haven, and Bridgeport and Devon by 1985
- Buy land and begin a program to *relocate tank farms* away from the shoreline through a long-term program to buy land and build new inland facilities

☐ **Dredge New Haven harbor channel depth to forty feet.** The U S Army Corps of Engineers should obtain the appropriate authority and funding

9 MOST RECENT SHORELINE DEVELOPMENT IGNORES NATURAL FORCES

Flood and erosion damages around the Sound average millions on a yearly basis and we haven't had a serious hurricane since 1954 We have built on the foundations of washed-away buildings, on the edges of eroding bluffs, and along the banks of rivers with long flooding histories Sooner or later, the sea and the rivers will take this land back We must take steps now to live with the forces of nature, instead of in spite of them

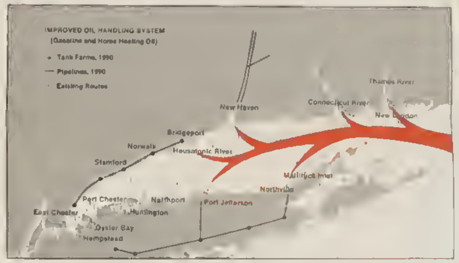
Many of the region's communities are now participating in the new National Flood Insurance Program which provides major incentives for *local* flood plain management Over the long term, these local programs should regulate certain development, and require protection for other development in the Sound s flood plain

NEXT STEPS

☐ **Communities with flood-prone lands** should join the National Flood Insurance Program and develop flood plain management programs, if they haven't already Connecticut should pass legislation by 1976, establishing the necessary regulations to make communities eligible for the program, where the localities don't do it themselves, similar to legislation already adopted in New York State

☐ **Alternative ways of protecting lives and property** in seven tidal floodprone areas should be studied in detail by the U S Army Corps of Engineers, with recommended solutions by 1985 Special consideration should be given to solutions other than the traditional building of dikes and dams, consistent with Section 73 of the 1974 Water Resources Development Act

☐ **Flood control structures** on nine rivers and streams in Connecticut should be built by the U S Soil Conservation Service, under the authority of Public Law 566 for small watershed projects



10 OUR DEMANDS FOR ENERGY ARE BEGINNING TO GROW MORE SLOWLY

Electricity demand is not growing as fast now as it traditionally has in the past In some places, the change has been drastic Much higher prices, an economic recession, and conservation practices are all responsible But no one can predict that this new trend will hold At best, the slowdown will only postpone the time when new generating facilities must be built, if the area is to maintain its self-sufficient power supply without depriving many of its citizens of the obvious advantages of abundant energy

NEXT STEPS

☐ **Energy conservation practices** must be vigorously pursued by private citizens, business and industry, and every level of government The New York Public Service Commission and the Connecticut State Energy Office should establish strict energy conservation goals and recommend programs to achieve them This must include all forms of energy

☐ **Research and development spending** by the utilities for new forms of energy should be set by the New York Public Service Commission and the Connecticut Energy Office, and rate structure studies should also be required

THERE IS MUCH MORE IN THE PLAN ITSELF

There are over 600 recommendations in this plan for Long Island Sound Many of them are discussed in Volume 1, Summary of the Main Report There s even more detail in Volume Two The Plan Supplement And specific cost and benefit information and exhaustive evaluations can be found in planning reports for ten specific subjects Copies of this brochure and the other reports of the Long Island Sound Regional Study are available from the New England River Basins Commission, 55 Court Street, Boston, MA 02108

LAND USE AND CRITICAL NATURAL RESOURCES

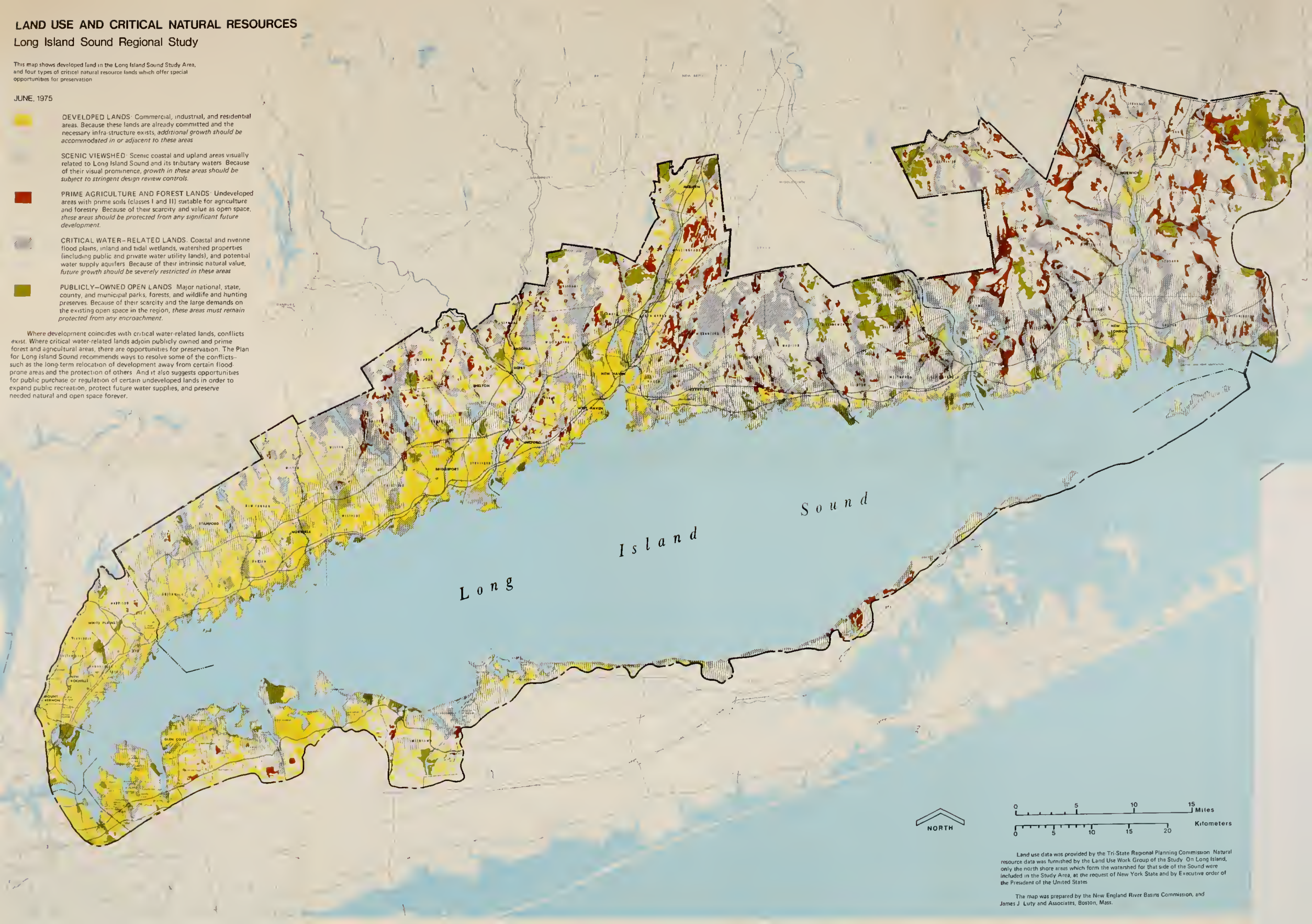
Long Island Sound Regional Study

This map shows developed land in the Long Island Sound Study Area, and four types of critical natural resource lands which offer special opportunities for preservation

JUNE, 1975

🟨	DEVELOPED LANDS· Commercial, industrial, and residential areas. Because these lands are already committed and the necessary infra-structure exists, *additional growth should be accommodated in or adjacent to these areas*
⬜	SCENIC VIEWSHED· Scenic coastal and upland areas visually related to Long Island Sound and its tributary waters Because of their visual prominence, *growth in these areas should be subject to stringent design review controls.*
🟥	PRIME AGRICULTURE AND FOREST LANDS· Undeveloped areas with prime soils (classes I and II) suitable for agriculture and forestry Because of their scarcity and value as open space, *these areas should be protected from any significant future development.*
▨	CRITICAL WATER–RELATED LANDS. Coastal and riverine flood plains, inland and tidal wetlands, watershed properties (including public and private water utility lands), and potential water supply aquifers Because of their intrinsic natural value, *future growth should be severely restricted in these areas*
🟩	PUBLICLY–OWNED OPEN LANDS Major national, state, county, and municipal parks, forests, and wildlife and hunting preserves. Because of their scarcity and the large demands on the existing open space in the region, *these areas must remain protected from any encroachment.*

Where development coincides with critical water-related lands, conflicts exist. Where critical water-related lands adjoin publicly owned and prime forest and agricultural areas, there are opportunities for preservation. The Plan for Long Island Sound recommends ways to resolve some of the conflicts--such as the long-term relocation of development away from certain flood-prone areas and the protection of others And it also suggests opportunities for public purchase or regulation of certain undeveloped lands in order to expand public recreation, protect future water supplies, and preserve needed natural and open space forever.



Land use data was provided by the Tri-State Regional Planning Commission Natural resource data was furnished by the Land Use Work Group of the Study On Long Island, only the north shore areas which form the watershed for that side of the Sound were included in the Study Area, at the request of New York State and by Executive order of the President of the United States

The map was prepared by the New England River Basins Commission, and James J Luty and Associates, Boston, Mass.

This is a plan to save Long Island Sound. It deals with the water, and the land around it. If you had to sum up the plan in just two words, those words would have to be:

Guide Growth

Guiding Growth

Chapter One

HIGHLIGHTS

To more effectively manage the land and waters of the Sound the following actions are recommended - -

HIGH PRIORITY:

1. Establish a long-range management program characterized by:
   - State guidelines for local plans and regulations
   - identification of public access and critical areas
   - composite of local plans to form state coastal zone plans
   - coastal development permits issued by groups of localities
   - interstate co-ordination between state management groups
2. Meanwhile, an interim action program must begin immediately to:
   - focus attention on the plan
   - comment on development proposals
   - monitor and link state coastal zone programs
   - maintain "living inventory" of Sound-wide problems

OTHER RECOMMENDATIONS:

3. Protect key natural resource areas
4. Direct growth to and around existing developed areas
5. Improve public transit
6. Develop water facilities to guide growth
7. Encourage clustering

The condition of the Sound today is directly and chiefly related to past growth in the region. Since early in this century, development in the cities of the region—and especially New York City—has been spreading into the surrounding countryside. In the years since World War II, this process has accelerated dramatically, with profound consequences. And it is still going on.

The suburbanization of the area has resulted in relatively even, low-density residential and commercial development. The standard housing unit is the single family home on its own lot. The automobile is the universal means of transportation. And many municipal services have been stretched to the breaking point.

As a direct result of this largely unplanned growth:

- the shoreline is developed in a

Photo Courtesy *The New York Times*

Photo by J R Selleck

way that does not serve large numbers of people and ignores the forces of nature;

- water pollution from this scattered development is difficult and costly to control;
- public access to the pleasures of the Sound is restricted;
- open, or "breathing", space, is rapidly disappearing in developed areas, except the private open space of one's own backyard;
- air quality is severely impaired in many areas of the region, chiefly by automobile emissions;
- many people, from adult singles and newlyweds to retired senior citizens, are barred from living around and enjoying the Sound;
- the central cities of the region have serious social and economic problems.

"Let's Stop the Growth"

This is a very tempting answer to the region's problems. But restrictions on growth face formidable legal, political, and administrative obstacles. Long-term local efforts to restrict population growth appear to hold very few answers to the region's or the Sound's problems, in the absence of comprehensive national or regional growth policies.

By contrast, measures that seek to influence the character and location of growth, and to minimize its interference with the quality of life, hold considerable promise of effectiveness. Governments within the region should therefore seize the opportunity to guide growth, to influence its character and location and thus to protect natural resources, amenities, and the quality of life within their borders.

Where to Begin

Photo by Ingbert Gruttner

Growth in the New York metropolitan area has placed tremendous pressures on the open land around the Sound (opposite page). Often the victim of growth, the Sound's shoreline could provide the breathing space city dwellers so badly need (top). But poorly conceived development (above) ignores the potentially destructive forces of nature and denies public access.

The Sound and the land around it can be thought of in terms of three general zones. The *maritime edge* includes the open waters of the Sound, extending out to the boundary between New York and Connecticut, which runs roughly down the middle of the Sound, and all of that land that lies right at the water's edge. The depth of this strip varies from 250 to 1000 feet inland of the high water mark, depending on topography, biology, and socio-economic factors.

Activities at this land-water interface are of *direct and primary* importance to the Sound itself.

The *coastal sector* lies inland of the maritime edge, and up to the first major physical barrier that divides the near-shore from the interior. In Connecticut, this is the Connecticut Turnpike or the Boston Post Road. On Long Island, Route 25A serves this purpose. Activities here are of *secondary importance*, having somewhat less direct effect on the Sound.

The *interior uplands* are the remainder of the study area. Activities here are of *tertiary importance*, having only minimal effect on the Sound.

The Shore or Maritime Edge

The study has concluded that management of this land-water interface is *absolutely critical* to the future of Long Island Sound. Without an improved and more effective system of managing the activities in the maritime edge, little else we do to save the Sound will matter.

RECOMMENDATIONS

1. **A long-range management program** must be developed that requires the towns and cities on the Sound to develop local plans and regulations, in accordance with state guidelines, to identify and permanently protect critical environmental areas along the shore and assure opportunities for greater public access to use of the Sound. The coastal zone management planning process that is under way in each state is the obvious way to prepare a management system that can be supported by the public and established by the two state legislatures within the next several years. The

study's detailed recommendations regarding a preferred option for this permanent program are found in Chapter 9, Carrying out the Plan.

Meanwhile . . .

2. **An interim action program** must begin immediately to focus public attention on the proposals in this plan for Long Island Sound, to monitor the state coastal zone management planning process, to build public acceptance for a long-range management system, to marshal public opinion on development proposals that would violate the spirit of the plan, and to maintain a "living inventory" of the changing condition of Long Island Sound. See Chapter 9, Carrying out the Plan, for details.

3. **Local governments and the general public** must have a key role in planning for and managing the shore.

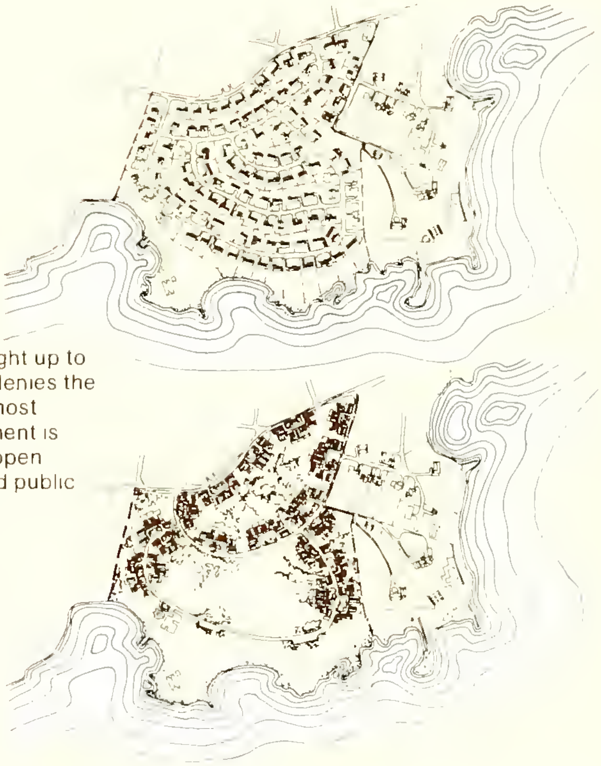
4. **Regardless of level of government,** the following policies should govern our use of the lands which are shown in the preceding Land Use and Critical Natural Resources Map, and which would affect the *shoreline or the waters* of the Sound:

- preserve the few natural and semi-natural areas left on the shore; concentrate development to maximize the amount of open space, points of access, and water views;
- design new residential development adjacent to the shore to achieve medium to high densities, thus reinforcing concentration while providing access to a larger number of people;
- discourage and relocate non-water dependent development away from the shore; encourage water-oriented commerce and recreation along the shore in those areas where development would not intrude on the natural setting;
- encourage public transit to and from shorefront facilities and locations to minimize present day, near-exclusive reliance on cars;
- evaluate new highways, interchanges, and other road improvements for their potential impact on the shore;
- restrict large-scale sewering of shore areas (except in cities) in order to avoid encouraging inappropriate development;
- design streets near the shore to increase public awareness and enjoyment of the Sound;

Photo by Ingbert Gruttner

On an urban sea like the Sound, business and pleasure compete for the shoreline (above). The Study's improved management program can help insure more peaceful coexistence.

Wetlands are among our most environmentally valuable lands (opposite page). Although we have lost 25 percent of them in the last decade, they are now protected by laws in both states against landfill, dumps, and other threats.



Development that occurs right up to the shore (upper diagram) denies the pleasures of the Sound to most people. But when development is clustered (lower diagram), open space can be preserved and public access assured.

- encourage participation in the federal flood insurance program; develop mechanisms to assure public use of flood plains returned to an open state as a result of this program; and discourage rebuilding in selected floodplains after a major disaster;
- recognize erosion as a natural phenomenon, beyond control for the most part, and discourage development in erosion-prone areas.

Managing the Land Away from the Shore

The low-density suburban development which characterizes most of the region's growth during the past three decades clearly offers some desirable benefits to those individuals who can afford it. But when it is used to the exclusion of other types of development, it wreaks havoc on the region as a whole, endangers natural resources and environmental quality, deprives those who can't afford it of any semblance of a quality lifestyle, and forces those who would choose a different lifestyle into the accepted suburban mold.

Despite this low-density development, which has used up land at high rates, two-thirds of the study area is still largely undeveloped. Most of this land is in Suffolk County on Long Island, and in Connecticut north of the Merritt Parkway and east of New Haven.

Much of this open land makes its greatest contribution to the public good in its present natural or other open condition and therefore represents "special opportunities" for protection and preservation. This is particularly true of lands which are influenced by or have an influence upon the region's water resources. These "water-related lands" and other special opportunity lands are shown in the Land Use and Critical Natural Resources Map. The development capability of these lands is limited for a number of reasons. Some are vital to the preservation of drinking water supplies. Some form an integral part of the marine food chain or serve as wildlife habitats. Some are subject to flooding or erosion damages, particularly along the shore.

But, without policies to guide the location of future growth; much of this remaining open space could be developed without regard to its suitability for agriculture, recreation, wildlife, watershed, and flood protection.

RECOMMENDATIONS

In the absence of a national land use policy, both states and the region's localities should make full use of constitutionally available powers to guide growth and to protect high contribution natural areas, inland or on the shore.

1. **The cluster principle** should be encouraged by local governments, and, in some cases, required, through appropriate amendments to local zoning ordinances.

2. **Effective economic incentives** should be established by the states to permit and encourage the best use of the *special opportunity lands*. They could, for example, strengthen existing legislation to include preferential assessment of prime agricultural, recreational, forest, and valuable mineral bearing lands.

3. **Fee title or development rights** should be acquired by all levels of government to those special opportunity areas whose best use cannot be realized in any other acceptable way. Such a program, involving prime agricultural land, is presently underway in Suffolk County.

4. **Waste water treatment facility grants** from the U.S. Environmental Protection Agency should be conditioned upon the development of area-wide ("208") plans which would direct development to environmentally suitable areas, such as existing urban centers.

5. **Impact statements** to assure consideration of the environmental, economic, and social consequences of proposed development could be required by state legislation. Statements should be a requirement, however, only for projects whose size, location, and nature make them significant, or those that are not in accord with a state-approved development plan.

Photo by R. Lans Christensen

Making the Water Clean

Chapter Two

Photo by Perry Ruben

Water pollution in the Sound affects everyone. We must all share in the costs of cleaning it up

HIGHLIGHTS

To clean up and preserve the Sound's waters the following actions are recommended - -

HIGH PRIORITY

1. Complete secondary treatment program
2. Reduce pollution from combined sewers
3. Designate "Non-degradation" zones
4. Prevent or reduce oil spills by:
   - consolidating ports
   - licensing tanker crew
   - tighter enforcement
5. Conserve water especially in Nassau County
6. Study nutrient enrichment of the Western Sound
7. Pursue Nassau County recharge.

MEDIUM PRIORITY

8. Protect future water supply sources
9. Encourage regional water supply systems
10. Strengthen Bi-state dredging policies by
    - assigning permanent disposal sites
    - developing material quality standards
    - establishing dumping procedures
11. Develop areawide ("208") programs in five places
12. Develop "non-point" pollution standards
13. Restrict and regulate landfills and dumps

OTHER RECOMMENDATIONS

14. Vessel waste regulations
15. Thermal discharge standards
16. Trend monitoring programs

A major cleanup is under way to achieve the national goal of swimmable and fishable waters throughout the Sound by 1983. But unless we are prepared to invest billions of dollars, we cannot meet that goal.

The people around Long Island Sound are faced with a very fundamental conflict. While the water of the Sound probably represents the region's most important natural resource, it also serves as a magnet for continued development which threatens the quality of that resource. We want the waters of the Sound to be clean enough to allow all kinds of pleasant water-oriented experiences, yet we have grown dependent on the Sound to dispose of the tremendous amounts of waste water we generate. The solution to this dilemma requires complex water management technology and expenditures of literally billions of dollars by governments and private enterprise, as well as much better management of the land around the Sound.

The federal Water Pollution Control Act of 1972 established a national goal of swimmable-fishable waters by 1983. However, a recent survey prepared by a group of most of the states estimates the cost of achieving this nation wide at $350 billion by 1990. Anticipated levels of funding are not expected to approach this figure.

Therefore, in a limited number of highly degraded urban harbors and rivers, including parts of Long Island Sound, the goal of swimmable-fishable waters will probably not be achieved.

At present, water quality in the Sound varies considerably. The worst pollution is found in the western end, and in some harbors and bays.

In other places, the quality of the water is generally excellent. Any program to manage water quality more effectively must consider both the restoration of polluted waters of the Sound and protection of existing high quality waters.

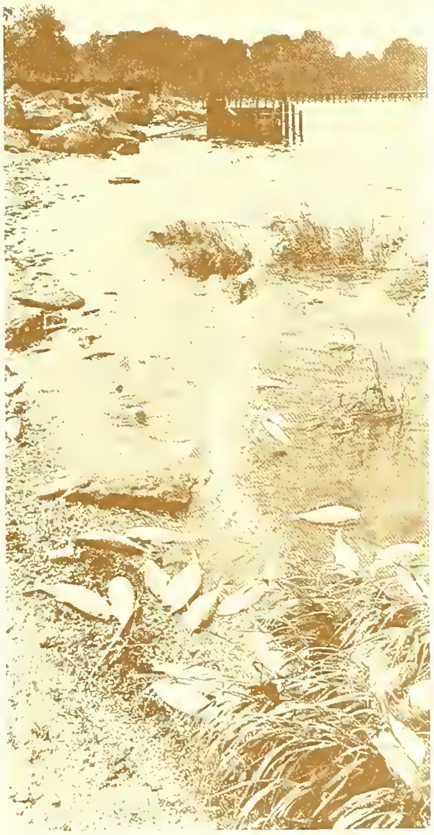
Restoration of Polluted Waters

Efforts to clean up the Sound must deal with many pollution sources. Inadequately treated domestic sewage or municipal waste is the largest. Next in significance are industrial wastes and overflows from so-called combined sewers, which carry both sewage and storm water runoff. Other major sources include oil spilled from ships and storage areas, polluted materials dredged from harbor bottoms and dumped in the Sound, non-point sources such as land runoff, wastes from commercial and recreational boats, heated water from power plants, and inflows from polluted rivers. Several of these sources have an immediate, degrading effect on water quality. And they also create long-term "cumulative stress" on the waters and marine life of the Sound.

Municipal waste water treatment plants have been the biggest pollution sources. In the western Sound—where municipal waste water sources are dominated by New York City's discharges—and in a number of harbors around the Sound, swimming and shellfishing are periodically or permanently prohibited for health reasons. Federal and state laws require that all waste water treatment plants be upgraded to secondary treatment by 1977. More than $600 million will be required to complete this effort. Since the federal government is required by law to provide 75 percent of the funding for these facilities, their completion is dependent upon the level of this funding. In the past, the states were able to avoid construction delays through a prefinancing procedure which is no longer permitted. The best estimate now is that this secondary treatment program will not be completed until 1980.

Photo courtesy *On the Sound* Magazine

Photo by Michael Marsland

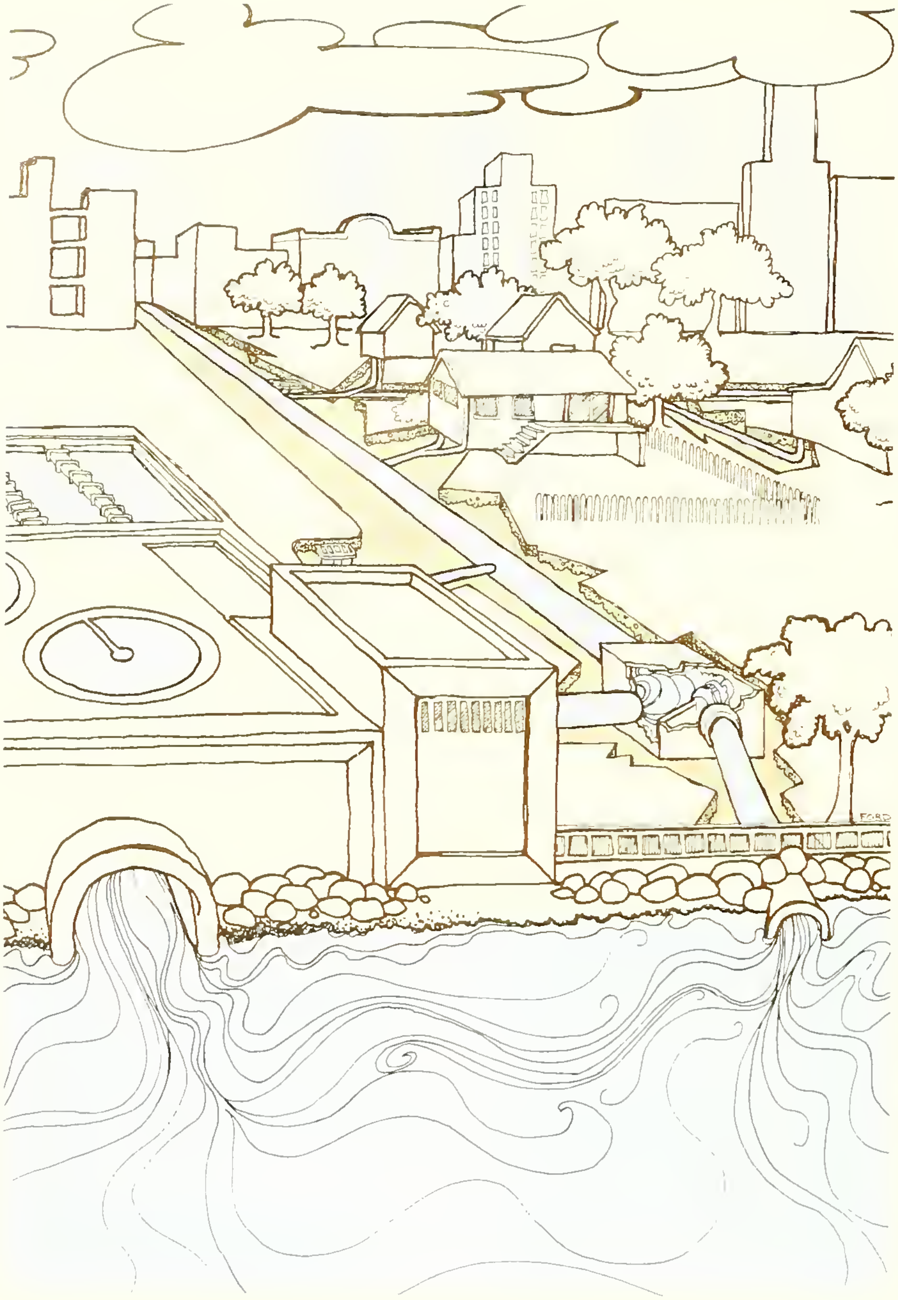


Fish kills are another obvious result of pollution. More and better waste treatment plants (above right) are needed, as well as other measures to make the sound clean - for fish and for people.

Photo by Ingbert Gruttner

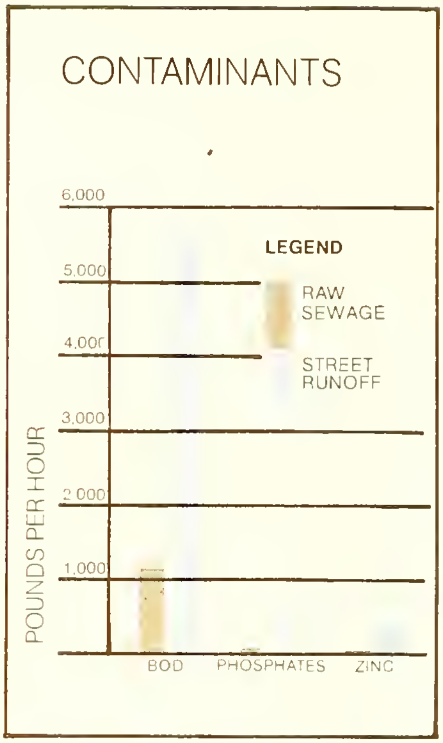
Correcting the combined sewer problem, which allows large "shock loadings" of harmful sewage and stormwater pollution to be discharged into the Sound after storms, will cost an additional $200 million in Connecticut and about $2 billion more in New York. Unless this is done, the goal of swimmable-fishable waters cannot be met.

Nutrients in municipal treatment plant discharges, chiefly nitrogen from human wastes, help to cause another



How A Combined Sewer System Works

Underground pipes collect sewage and other wastewater from homes and businesses and combine it with water that drains off streets into catch basins when it rains. Wastewater from all of these sources is then piped through trunk lines to wastewater treatment plants, where it is given primary, secondary, or advanced treatment, and discharged into the Sound. But when it rains heavily, so much water runs off the streets that most treatment plants can't handle the greatly increased volume. Overflow controls automatically discharge this combined sewage and street runoff into the Sound *without any treatment*. Raw sewage is an obvious polluter. But so is street runoff, since it literally washes the accumulated dirt from our city streets. Indeed, as the graph shows, street runoff during the first hour after a heavy rain can be a worse pollutant than raw sewage. Thus, even if the two types of wastewater - - sewage and street runoff - - were handled in *separate systems*, both types would still require treatment before discharge, in order to avoid polluting the Sound.

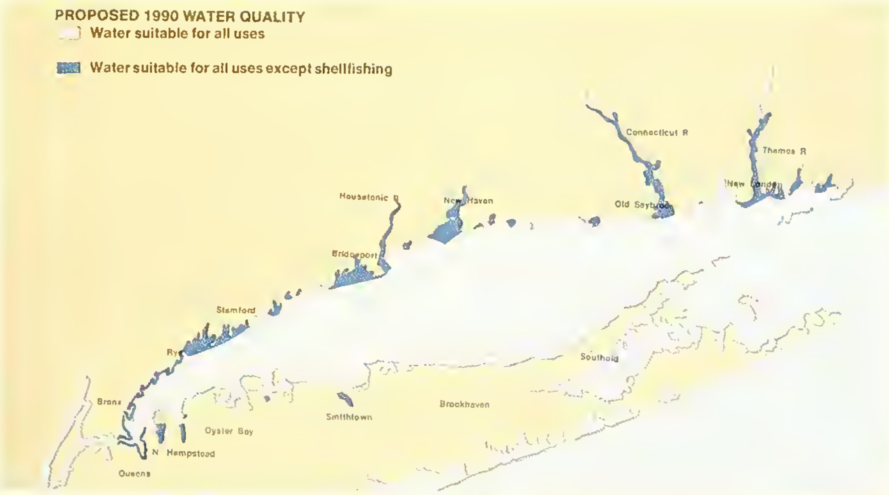


serious pollution effect called "eutrophication." Enrichment of the Sound by these nutrients causes "blooms" of seaweed and other forms of algae in many harbors where circulation is poor. The death and decay of this marine plant life depletes oxygen in the water, and kills fish in still, warm water. Advanced waste water treatment, *beyond secondary treatment*, to remove nitrogen would cost more than $300 million at plants in the western Sound alone. There is no assurance, however, that removal of nitrogen alone would solve the problem. Also the nitrogen removal process results in greatly increased amounts of sewage sludge, which would have to be disposed of.

Industrial plants are another major source of pollution. The 300 industries discharging wastes into the Sound and its tributaries are required by law to adopt the "best practicable" treatment of their waste discharges by 1977, and the "best available" treatment by 1983. Enforcement programs are in effect in both states, and companies are expected to meet the goals by treating their wastes before they are discharged into the Sound, or by "pretreating" and discharging to a municipal waste water treatment plant.

RECOMMENDATIONS

1. **Federal funds should be increased** by Congress immediately to insure that



A massive and expensive effort to make the Sound clean enough for swimming and fishing by 1990 will stil leave some harbors (dark areas on map, left), closed to shellfishing, due to increasingly stringent health standards

With petroleum the most important product shipped on the Sound, oilspills are an ever present danger By reducing the number of ports handling oil to just five, and requiring containment equipment and other measures, spills can be minimized and their effects better controlled

Photo courtesy *On the Sound* Magazine

no municipal waste water discharges reach Long Island Sound with less than secondary treatment after 1980.

2. **Abatement of combined sewer pollution.** Congress should insure that funds be made available to minimize pollution from combined sewer overflows. In most cases state and local emphasis should be placed upon repair of sewers and bypass regulators, storage, and treatment, rather than separation. It should be noted that the State of Connecticut specifically withheld its endorsement of this recommendation.

3. **Study of nutrient enrichment in the western Sound.** New York State should identify western Long Island Sound as "water quality limited" and initiate a special study of the area to determine whether nutrient removal at municipal waste water treatment plants will be necessary to attain water quality goals. The study should also determine the relative significance of point and non-point sources of pollution coming from the Upper East River, Westchester County, and Nassau County

Oil spills are a serious source of pollution in the Sound. They are usually preventable, but difficult to clean up. Spill frequency is directly related to the number of tankers and transfers. Fewer, large tankers will result in fewer spills, but the danger of larger spills will also increase. As larger tankers enter the Sound, it will be imperative that spills be minimized and rapid cleanup actions taken when they do occur.

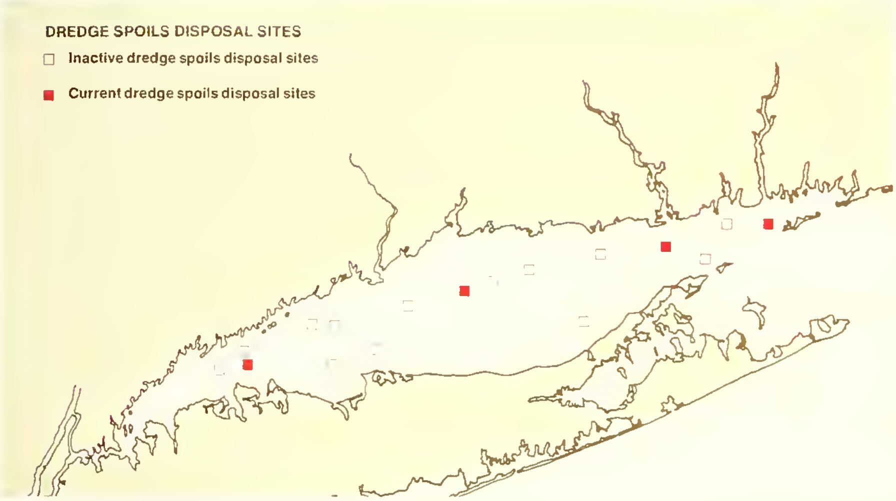
RECOMMENDATIONS

1. **To reduce the frequency and severity of spills** from petroleum handling operations:

- **Both states** should adopt the study's proposals for port consolidation, offshore terminals, and pipelines, discussed in Chapter 5, to help reduce the number of vessel trips and transfers in the Sound and facilitate the use of improved equipment;
- **The Coast Guard** should establish sea lanes to the major ports in the Sound;
- **Both states** should require that spill containment equipment be available in each receiving port and in use during all transfer operations;
- **Congress** should enact legislation to require licensing of all key crew members whose ships are used for hauling or pushing tank barges loaded with oil and

Photo courtesy *On the Sound* Magazine

Photo by J R Selleck


DREDGE SPOILS DISPOSAL SITES
☐ Inactive dredge spoils disposal sites
🟥 Current dredge spoils disposal sites

Dredging harbors and channels (above) is a necessary activity The problem is where to dump the "spoils," especially those contaminated with industrial and municipal wastes Only four of the 17 designated dumping areas in the Sound are presently in use We need to establish improved standards and reduce the number of harbors that require dredging by consolidating petroleum receiving and distribution facilities in just five ports around the Sound

other hazardous materials;

- **Congress and both state Legislatures** should provide increased funds and staffing on both the federal and state levels in order to implement and enforce existing legislation dealing with oil and other hazardous materials;

All measures except full port consolidation should be implemented by 1977.

Dredging and disposal of dredge spoils have been the subject of much controversy. Disposal sites in the Sound have been reduced from seventeen to four; and dredging projects in New Haven and New London have been carefully monitored to determine adverse effects. The major concern is that the bottoms of those urban harbors which regularly require dredging contain deposits of heavy metals, pesticides, and other industrial process wastes and toxic materials. When stirred up by dredging, they can cause long-term damage to shellfish, water fowl, and other marine life. Our objective must be to assure that the effects of dredging and disposal are, at worst, short-term and localized. The recommended port consolidation plan will substantially reduce the need for dredging in many harbors.

RECOMMENDATIONS

1. **Dredging Policy.** New York and Connecticut should assign permanent dredge spoils disposal sites, establish the quality of materials to be dumped there and, together with the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers, and the National Oceanic and Atmospheric Administration (NOAA), set up dumping procedures to lessen the environmental harm, and monitoring programs to determine the long-term effects of these activities. As discussed at greater length in Chapter 3, the Corps of Engineers should also study the feasibility and impacts of the treatment and use of solid waste and dredge spoils to build artificial islands in the Sound for recreation and other purposes.

Non-point sources of pollution, especially storm water runoff from construction sites and urban and rural land, are widespread. Strict enforcement of land use controls is needed to preserve wetlands and open floodplains, which act as natural filter systems, and to relocate dumps and landfill operations away from the shore. Sediment basins can also reduce runoff. And air pollution controls being developed in both states can lower the significant amounts of *airborne contaminants* that enter the Sound.

RECOMMENDATIONS

1. **Non-point pollution control.** EPA should continue to conduct research and demonstration projects on non-point sources of pollution and their control. The states should identify, monitor, assess, and predict the nature and extent of non-point source pollution, particularly in the most severely

polluted water bodies. By 1977, non-point source control should become a major program emphasis, using a combination of land use controls and land management practices to protect vulnerable waters and reduce runoff, erosion, and sedimentation, and tailored to local conditions. See Chapter 7 for suggested means of controlling erosion and sedimentation.

2. **Land fills and dumps.** The states, through their respective ongoing solid waste recovery and management programs, should assure that the effects of dump and landfill leachates on the Sound are minimized by 1977. Open dumps and landfill operations on the shore or on the banks of streams tributary to the Sound should be terminated as soon as suitable alternative upland sites become available.

Vessel wastes from boat toilets, although not a major source of pollution in the Sound, can be intolerable in enclosed harbors and coves. Shellfish beds in both states have been closed due to possible fecal contamination from nearby marinas. New York has required boats to have sewage holding tanks for four years, but the slow development of pump-out facilities has made it difficult to enforce the law.

RECOMMENDATIONS

1. **Regulation.** The U.S. Environmental Protection Agency and the Coast Guard should immediately put into effect standards and regulations for vessel wastes which require holding tanks or other certified discharge devices on new vessels two years after the regulations go into effect. On-board certified, flow-through treatment devices would be permitted on existing vessels for the duration of their lifetime, if they are installed within the first three years.

2. **Special pretreatment.** Both states should assist local governments in providing pretreatment facilities to remove bacteriacides from wastes pumped from holding tanks, to insure the continued operation of municipal waste water treatment plants. Additional costs for such pretreatment should be reflected in appropriate user charges.

Thermal pollution is the result of power plants discharging cooling water into the Sound at a higher temperature than that of the receiving water. Increased discharges, at least through 1990, will probably have no adverse effect on the Sound as a whole,

Photo by Herbert Gruttner

Drawing by Jim Skerritt

Air pollution from cars and other sources (left), dirty water that runs off the land, and other so-called "non-point" sources of pollution in the Sound are more difficult to bring under control than the wastes that come out of the end of a pipe. Wastewater discharged from boats--especially in crowded harbors (below) -- must be controlled either with on-board treatment devices or holding tanks which can be pumped out (drawing above) by portable facilities at marinas

Photo courtesy *On the Sound* Magazine

Photo by Perry Ruben

Pristine waters around the Sound, such as the Saugatuck River, should be protected from degradation, by declaring them "non-degradation zones." It is easier and cheaper to protect already clean waters than it is to clean up waters that have been polluted.

but local effects can be harmful to marine life. A more serious hazard is the destruction of marine life when the cooling water is taken into the plant. High mortality for some species is possible. However, through proper site planning and design, these damages can be minimized. See Chapter 5 for recommendations regarding power plant design standards.

Preservation of High Quality Waters

In a highly urbanized area such as the Sound region, any remaining unpolluted waters or air become increasingly valuable. As the region continues to grow, development pressures will induce increased uses of these remaining high quality waters and the lands that border them. Abuse of these waters or lands would degrade the water quality. Protection of floodplains, wetlands, and erosion-prone steep slopes from development is especially important to prevent water pollution damages.

RECOMMENDATIONS

1. **Non-degradation zones.** Both states should designate selected streams and estuarine areas which presently have excellent water quality as non-degradation zones, prohibiting the discharge of additional point and most non-point pollution in order to preserve fish, shellfish, and recreational waters. Particular attention should be directed toward coves and embayments where both swimmers and boats congregate during summer months. Candidates for non-degradation zones include the Niantic River, the Poquonock River and Mt. Sinai Harbor.
2. **Federal guidelines.** The U.S. Environmental Protection Agency should develop national guidelines on non-degradation to assist the states in their definitions and control strategies, and to standardize the criteria for non-degradation.

Water supply problems around the Sound are most acute on Long Island, where population growth and total dependence on underground sources will create critical shortages in some areas within the next decade. These shortages will require both immediate conservation measures and long-term management solutions.

New York City and Westchester County share the same system of upstate and out-of-state reservoirs.

Connecticut has a well-developed public water supply system, using both reservoirs and ground water, as well as a plan for protecting and expanding supplies through 2020.

RECOMMENDATIONS

1. **Nassau County water needs.** Nassau County should establish water conservation programs immediately, including more stringent emergency programs, such as restrictions on car washing, lawn watering, and street washing, in case of drought. Simultaneously, Nassau County, with state and EPA assistance, should vigorously pursue ground water recharge demonstration projects and follow-up programs to preserve both the quality and quantity of the ground water. Existing county sewering plans should also be implemented. In addition, provision should be made for the importation of some water from outside the county, at least during periods of drought.
2. **Regional systems.** State and local governments should encourage development of regional water supply systems, where economically feasible, to provide greater flexibility and reliability in provision of water, and further interconnections between water systems should be constructed.
3. **Development of new and expanded supplies.** State, regional, and local planning agencies should adopt land use policies and regulations to protect and conserve potential new and expanded water supplies from unwise development

Water Quality and Supply Management

Water is probably the most important natural resource of the Long Island Sound area. Yet increasing demands of urban development threaten to degrade existing high quality waters and complicate the cleanup of polluted waters. Any water quality improvement program can be self-defeating if it merely stimulates unsound shoreland development that generates yet another round of pollution.

The federal Water Pollution Control Act Amendments of 1972 recognize this problem and require Areawide Waste Treatment Management ("208") Planning as a continuing process wherever substantial water quality control problems exist because of urban-industrial concentration or other factors. This links water quality restoration to land use planning.

One areawide program is getting started on Long Island, under the direction of the Nassau-Suffolk Regional Planning Board, and it is anticipated that similar programs will be initiated for New York City, Westchester County, and Connecticut. These programs will help to resolve many of the water quality management problems identified by this study, and become a vehicle for restoring waters throughout the Sound to swimmable-fishable condition.

RECOMMENDATIONS

1. **Areawide waste treatment management planning ("208") programs** should give first priority consideration to the water quality problems in communities bordering the Thames River; New Haven and other communities bordering the Quinnipiac River; Greater Bridgeport area; Westchester County communities; and New York City.
2. **Trend monitoring programs.** Both states and the Interstate Sanitation Commission should expand their existing monitoring programs immediately to include trend monitoring of cumulative pollution indicators throughout the Sound, with particular attention to inorganic nutrients, organic pollutants, trace elements, and oceanographic factors.
3. **Coordinate pollution cleanup schedule for Long Island Sound.** The states and the U.S. Environmental Protection Agency acting together and drawing on the area's professional and academic talent, should utilize an ongoing "continuing planning process" in a *systems approach* to coordinate water quality management decisions and pollution abatement priorities for Long Island Sound, and to insure the best use of limited funds for the attainment of water quality objectives for the Sound

Areawide waste treatment management planning is a long name for a sensible approach to water pollution control. It takes into consideration *all* pollutants that eventually find their way into the waters of a given area -- from the air, from boats, from sewage treatment plants, from combined storm and sewer systems in cities, from agricultural fertilizers and pesticides that run off the land, and from all other sources. It is a comprehensive, all-inclusive process which places strong emphasis on modifying pollution-causing land uses in order to clean up our waters and keep them clean.

Photo by Ingbert Gruttner

Improving Access to the Sound

Chapter Three

HIGHLIGHTS

To provide new opportunities for people to get to and enjoy the Sound, these actions are recommended

HIGH PRIORITY:

1. State policy declaration to improve access over long term
2. Establish "Long Island Sound Heritage" by
    - Congressional appropriation
    - Reserving state bond funds
    - Completing 3 undeveloped State Parks
    - Expanding 2 existing State Parks
    - Developing 4 urban State Parks
    - Purchasing 8 islands
    - Purchasing and developing 4 prime waterfront parcels
3. Develop passive shoreline mini parks
4. Nourish certain narrow beaches with sand
5. Provide recreational ferry/launch services in 10 areas
6. Improve mass transportation to state parks.
7. Provide small boat rentals at 16 public marinas.

MEDIUM PRIORITY:

8. Expand and connect existing open space system by
    - Utilizing federal Land and Water Conservation Fund
    - Reserving state bond funds
    - Long term purchase of about 8,000 inland acres
    - Providing incentives for public use of private lands
    - Develop hiking trails and bike paths
9. Study the feasibility and impacts of an artifical island
10. Require certification for boaters
11. Identity recreational boating harbors
12. Provide for some recreation on watershed lands
13. Secure right of first refusal on private recreation facilities

OTHER RECOMMENDATIONS:

14. Local beach opportunities
15. Restrictions on state and federal aid
16. Public marinas

Swimming, boating, fishing, picnicking, sitting or walking on the beach, seeing the water and shoreline from a distance, exploring undeveloped natural areas along the shore—all these pleasant Sound activities are in short supply for many of our residents. For historical reasons, a relatively few people occupy most of the Sound's shoreline. The majority make do with what's left.

Ownership of the Sound and the shoreline around it are determined by laws and by grants of property rights spanning hundreds of years. The States of New York and Connecticut own the body of water itself and most of the shore below the mean high water mark. The towns, states, and the federal government share authority over the waters and bottom of the Sound and how they are used. Theoretically, Long Island Sound is a public trust, held by governments for the use and enjoyment of all the nation's citizens.

As a practical matter, however, access to this public "facility" is largely controlled by the owners of the land immediately adjacent to the water's edge. Over 80 percent of this land is owned by individuals and business firms, whose property rights can effectively cut off public access to the Sound. Much of the remaining 20 percent consists of town-owned beaches, where non-residents are frequently excluded. There are only five developed state parks along the Sound's 600-mile coastline.

Since the shoreline of the Sound is finite, it can only serve more people in more satisfying ways if we adopt a new attitude toward this unique land at the water's edge, and find ways to manage it for greater public benefit.

There are signs that this has already begun to happen, that a new awareness of the unique value of the shore has started to emerge. Development in the wetlands around the Sound, for example, is now controlled by laws in both New York and Connecticut. There is growing recognition, expressed in recent federal and state flood insurance legislation, that sections of the coast subject to flooding should not be developed, and that development already existing in many of these flood plains should be gradually reduced.

State recreation plans acknowledge the need for more public parks and beaches, greater protection for shoreline wildlife refuges, and greater public access to the scenic beauties of the Sound. Open land in the midst of development is increasingly viewed as valuable in its own right, not just as space for more development.

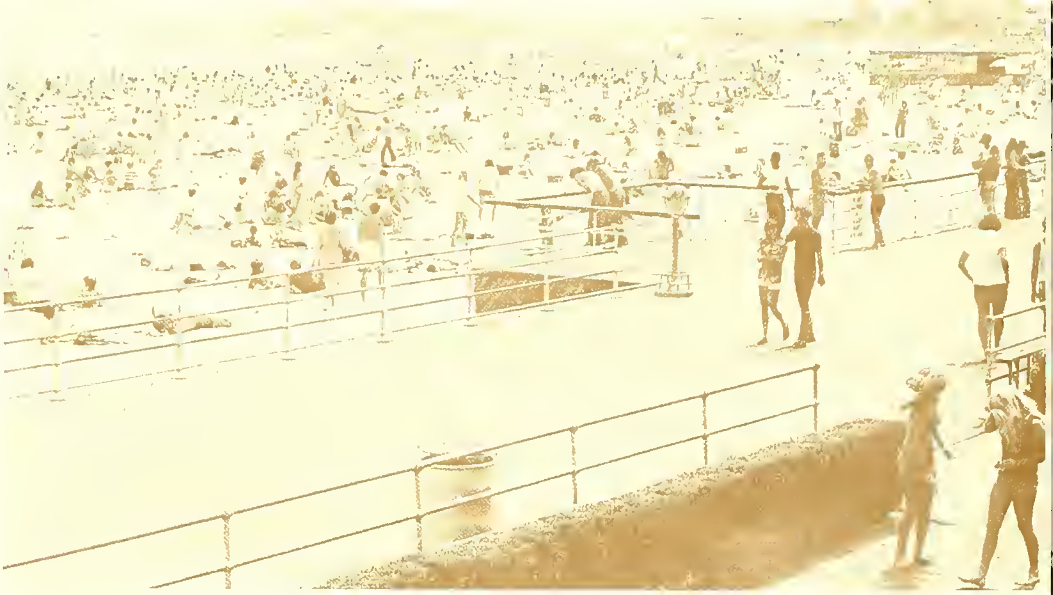


Photo courtesy *New London Day*

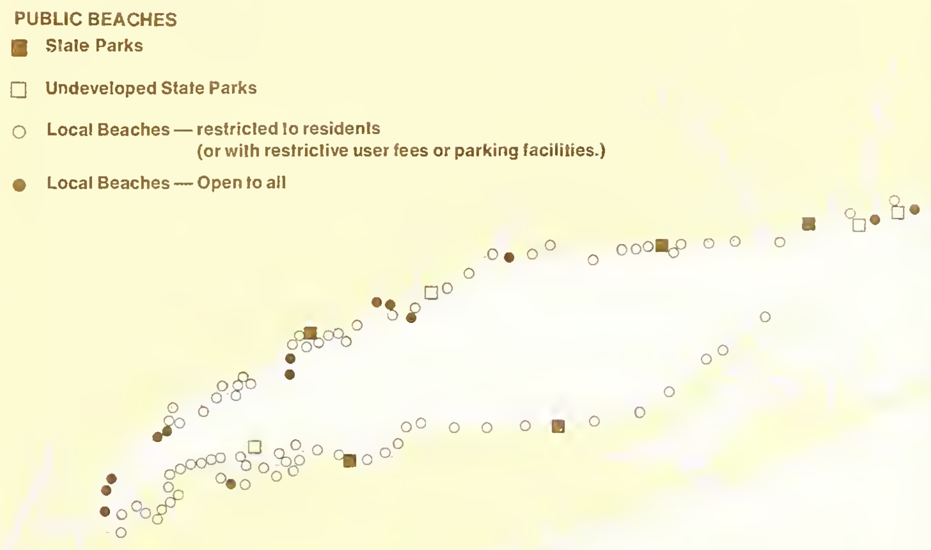
Ocean Beach in New London (above) is one of the few municipal parks around the Sound open to the public Most Sound beaches are restricted to residents of the community in which the beach is located, as the map below shows

RECOMMENDATION

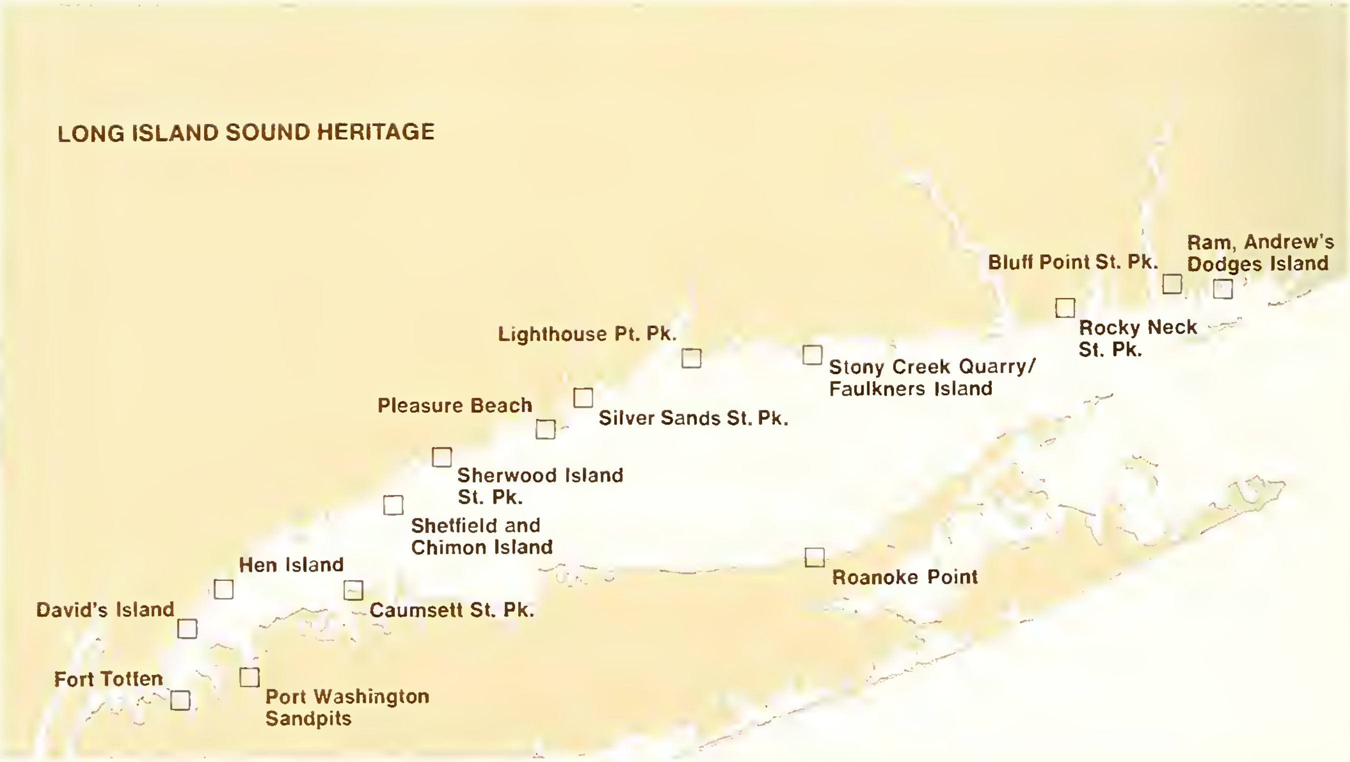
1. **State declaration of policy.** The State Legislatures of New York and Connecticut should unequivocally affirm the citizen's right to enjoy the Sound, and declare it to be the policy of each state that increased public access will be achieved over the long run. Public officials at every level of government should insure that optimum public use is made of public open space, consistent with environmental limits. Moreover, both states should consider public access impacts in their respective coastal zone management programs.

Public Purchase and Development of the Shoreline

The price of land on the shores and islands of the Sound goes up every year. An acre of shorefront property in some portions of the western Sound now costs as much as $250,000. Next year, it will be higher. If public access to and enjoyment of the shoreline is to increase significantly, certain key parcels of shorefront land must be purchased immediately. Other parcels should be purchased, or the public rights to their use secured, in accordance with a long-term strategy. And certain parcels already owned by governments should be developed for public use, some immediately, the rest as funding permits.


PUBLIC BEACHES
■ State Parks
□ Undeveloped State Parks
○ Local Beaches — restricted to residents (or with restrictive user fees or parking facilities.)
● Local Beaches — Open to all

Drawing by Jim Skerritt



If public tax money is used to clean up the Sound's waters, the public must be able to enjoy the Sound. The *Long Island Sound Heritage* is a major Study proposal to buy and/or develop 15 sites (map, above) to provide significantly greater public access to and enjoyment of the Sound. One of these sites, Bluff Point State Park (drawing above) in eastern Connecticut could serve many thousands annually, with easy access provided by the nearby Penn Central Shore Line, and a passenger ferry service to Ram Island.

RECOMMENDATIONS

1. **Long Island Sound Heritage.** The study has concluded that there exists: (1) a serious shortage of general public open lands along the shores of the Sound, (2) large concentrations of recreationally deprived low and moderate income families throughout and on the edges of the study area; (3) very limited state and local financial resources for providing significantly increased access to the Sound; and (4) a clear federal interest in the general health and use of the Sound, as evidenced by the massive federal expenditures committed to its restoration.

Presently, the federal role in recreation takes primarily two forms: 50 percent cost sharing in state or local acquisition and development of land through the Land and Water Conservation Fund or 100 percent federal control of recreation lands by the creation of national parks and national recreation areas. Public comment on the recreation recommendations indicated that there is no support for a new national park or other federally-administered area. And, although the Bureau of Outdoor Recreation, which administers the Land and Water Conservation Fund, believed that their existing program and other federal programs were sufficient to provide more recreation, a majority of the other study participants and the general public felt otherwise, for the reasons listed above.

Lighthouse Point Park could serve many residents of the Greater New Haven area if it were expanded and developed as a part of the *Heritage*.

The study therefore recommends that Congress appropriate approximately $50 million to a Long Island Sound Heritage Fund, which would provide up to 75 percent federal assistance for state and local acquisition and/or development of certain areas of particular recreation, conservation, and scenic opportunity. Obviously, much more detailed site plans, including minimizing impacts upon wetlands and other natural systems, detailed cost estimates, and capacity ratings, will be required for each area. To be included in the Heritage:

- The southeastern portion of *Bluff Point State Park* in Groton should be developed by 1977 with one-half mile of beach — in conjunction with Ram Island (see below) — and 500 picnic sites. Controlled hiking trails and an interpretive program will keep the southwestern portion of the park—including the eroding tombolo—undeveloped for wildlife and nature study.
- *Ram, Dodges, and Andrews Islands* in the Mystic Islands Group in the eastern Sound, should be purchased immediately. One-half mile of beach on Ram should be developed by 1980, with ferry service from Bluff Point State Park. Dodges and Andrews should be limited to nature observation activities, with only casual recreation, such as fishing and scuba diving.
- *Rocky Neck State Park* in East Lyme should be expanded with the annexation of undeveloped portions of the about-to-be-abandoned Niantic State Farm for Women, an 850-acre tract with prime natural areas, Bride Lake, and a significant freshwater marsh. Buildings on the site should be put to some appropriate re-use, while development of the open land could include about 400 campsites by 1985. State construction of a new erosion control structure at the mouth of Bride Brook would result in the natural restoration of about 0.6 mile of beach.
- *Stony Creek Quarry and Faulkner's Island* should be purchased by 1980 to serve as a single, interrelated casual recreation resource. Access to the historic lighthouse island would be provided by a small recreational ferry or launch. Development of both sites could include 300 picnic sites and at least one-half mile of beach.
- *Lighthouse Point Park* in New Haven should be upgraded and expanded to the east by 1985, through the purchase of flood prone land along Shell Beach on an as-available basis or after a major flood. The area should then be developed as a major new state park, including about one-half mile of beach, 500 picnic sites, and provision for a ferry service to downtown New Haven.
- *Silver Sands State Park* should be developed immediately by the state and expanded by 1980 to include adjacent flood prone areas, which should be significantly enlarged and nourished with sand fill. A boardwalk from Silver Sands to Charles Island would serve as a fishing pier and means of access. Development could include 500 picnic sites, about two miles of beach, and a small public marina facility, including boat rentals and slips.
- *Pleasure Beach* in Bridgeport should be substantially upgraded for development as a state park. *Long Beach* in Stratford should be purchased and included in the park as leases expire. Additional expansion could include the purchase of the *Great Meadow* wetland complex for use in conjunction with a "Classroom by the Sound" nature center. Ferry service between downtown Bridgeport and the existing ferry dock at Pleasure Beach, restoration of the bridge to Pleasure Beach from Bridgeport, and a new road to Long Beach from Great Meadows Road in Stratford would provide access. Parking should be situated at or near the northern terminus of the bridge, with shuttle bus and pedestrian access from there. Recreational

Boardwalks, bike paths, and wetlands trails are just a few of the facilities that could be developed at Pleasure Beach in Bridgeport and Lighthouse Point Park in New Haven

Drawings by Jim Sherrill

Two views of a revitalized Fort Totten in Queens. Redeveloped as part of the *Long Island Sound Heritage*, this nearly-abandoned military installation would serve millions of New Yorkers with a recreation facility like Mission Bay in San Diego or Toronto's new Waterfront Park. Regular ferry service from Fort Totten to Caumsett State Park in Suffolk County (drawing opposite), would provide an exciting way to move between these two new recreational centers. Caumsett could be developed to include swimming at the shore and a "Classroom by the Sound" near the Fly Island marsh.

use of portions of Long Beach will have to be restricted during the Least Tern nesting season.

- Public ownership of the *Norwalk Islands* should be augmented through state purchase of *Sheffield Island* by 1975, as a public offshore swimming and general recreation facility, and of *Chimon Island* as a wildlife refuge. A passenger ferry service between downtown Norwalk and Sheffield would provide access.
- *Sherwood Island State Park* should be expanded by 1980 to include the flood prone properties immediately to the west (0.4 mile) and the area between the northern park boundaries and the Connecticut Turnpike. Development would include 500 picnic sites and four boat ramps.
- *David's Island* in New Rochelle should be purchased by 1978. Development here should include 0.8 mile of beach, 200 picnic sites, and twenty-five to fifty transient marina slips. Access would be provided by passenger ferry from New Rochelle.
- *Hen Island* in Rye should be purchased as a wildlife management and nature observation area which might operate in conjunction with the existing Marshlands Conservancy. Development might include a Classroom by the Sound.
- *Fort Totten* in Queens should be developed by 1980, possibly along the lines of Mission Bay in San Diego or Toronto's new waterfront park, rehabilitating significant buildings within the Fort, adding sand fill to about three miles of beaches west and south, 100 picnic sites, a marina to include public boat rentals, launch ramps, and slips and moorings, a parking garage, and a pier for recreational ferry service to Caumsett State Park. (See below)
- *Port Washington Sand Pits*

should be purchased and reclaimed as a major new public shorefront facility by 1980. Major emphasis of the reclamation, particularly along the shore, should be the provision of expanded recreation opportunities. Detailed plans should be developed in concert with the Town of North Hempstead and Nassau County.

- *Caumsett State Park* should be developed by the state by 1980 as a regional beach and as a casual recreation facility inland. Development on the shore could include a Classroom by the Sound in the Fly Island wetland area and more than one mile of beach. In the inland portion, development should be limited, but include the preservation and appropriate reuse of the buildings, about 200 camping and picnic sites. Minor improvements to existing roads, development of a small minibus service from inland parking facilities, and passenger ferry service from Fort Totten and Oyster Bay to the existing dock within the cove would provide access.
- *Roanoke Point in Suffolk.* Four hundred and fifty acres of beach, bluff, and woodlands along Suffolk County's north shore between Roanoke Landing and Jacobs Point, should be purchased by 1978, for recreation and scenic preservation. While the back of the bluffs could be used for camping, hiking, and picnicking, foot access to the beach or bluffs, which are extremely erodible, would be limited to a few points.
- *North Shore bluffs* to the east and west of Roanoke Point should be designated as an area of particular concern in New York State's coastal zone management plan. The bluffs should be preserved and development prevented by the study's proposed permit process described in Chapter 9.

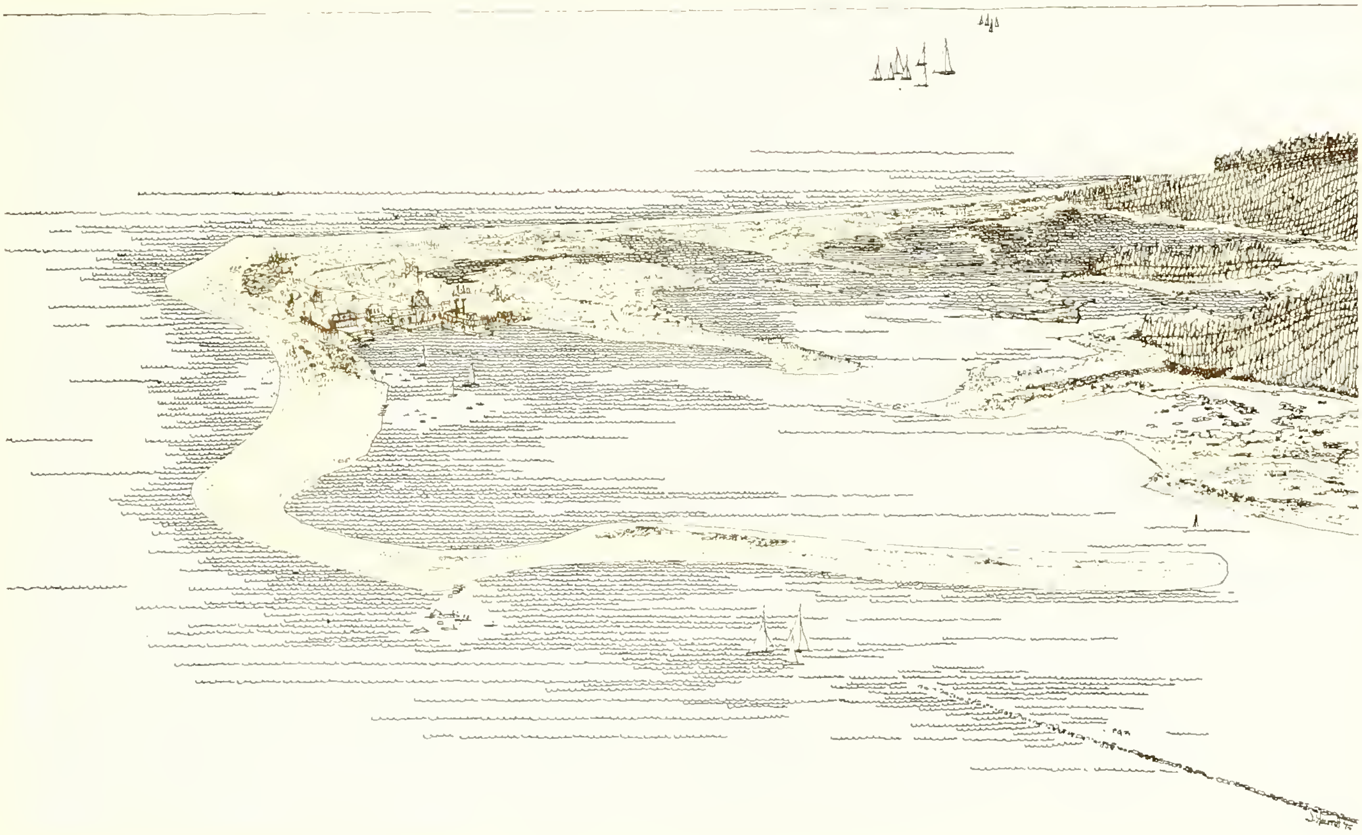
Artificial Islands and Beach Creation in the Sound

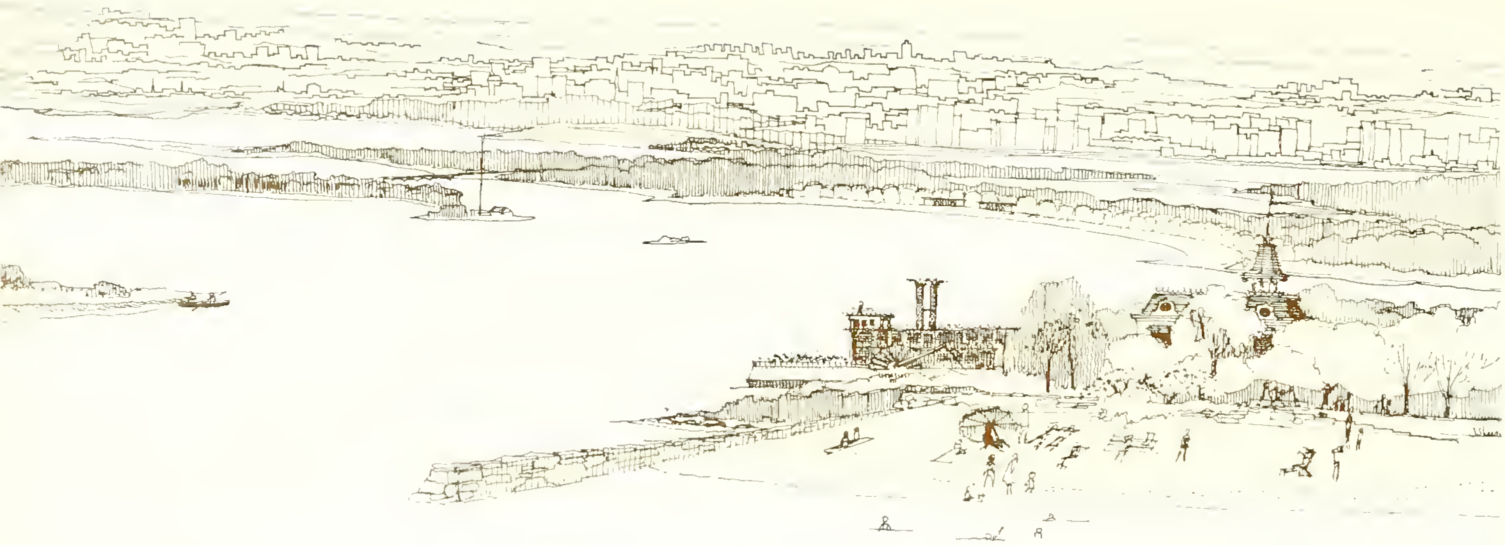
Preliminary investigation has determined that the creation of new recreation shoreland in the Sound may be a practical and economically feasible alternative to the purchase of existing shoreline. A separate report prepared for the study suggests that such islands could be constructed using dredge spoils and construction wastes to meet long-range recreational and public access needs, at an estimated cost of $40,000 per acre, compared to existing land prices as high as $250,000 per acre. Artificial sand nourishment at selected existing state parks could more than double their capacity.

RECOMMENDATIONS

1. **Artificial Islands.** The U.S. Army Corps of Engineers, with the cooperation of New York State, should conduct a study of the feasibility and environmental impacts of an artificial island in the Sound. Should it prove feasible and environmentally acceptable, New York and the Corps should undertake construction of at least one such island — perhaps an Orchard Beach Island, close to New York City. Connecticut should ascertain appropriate locations for similar islands and establish timetables for construction and use.
2. **Beach Nourishment.** The Corps of Engineers should study the feasibility of beach nourishment to an average width of 300 feet, at all of the Heritage sites, and at seven existing beaches open to the general public.

Drawing by Jim Skerritt





Drawing by Jim Skerritt

One study recommendation calls for an artificial island which would be constructed in the western Sound. The aerial photo (right) shows crescent-shaped Orchard Beach in Pelham Bay Park, with Co-op City in the background. The drawing (above) shows the new island, developed for intensive recreation and served by passenger ferry service from Orchard Beach and Fort Totten in Queens.

Photo by Ingbert Gruttner

Town and County Beaches

One of the most controversial issues throughout much of the Northeastern United States is the question of whether coastal towns and counties have the right to exclude non-residents from their beaches. Outright prohibition and exorbitant parking and use fees, which effectively result in exclusion, are prevalent around the Sound. These legal and constitutional questions will ultimately have to be resolved in the courts.

The study has found, however, that most of these town beaches are already used to their capacities—particularly on weekends. Because so few are underutilized, significantly increased general public access to the Sound will come only through new beach development.

RECOMMENDATIONS

1. **State and federal aid.** State and federal agencies which administer financial aid programs to local and county governments for park improvements should reaffirm existing regulations regarding general public access. Funds from these agencies for development, maintenance, and certain operating subsidies should be appropriated only if the municipality or county managing these facilities will permit access to all. A modest non-resident fee, bearing some relation to the costs of maintaining the facility, should be permitted, however.

2. **Local beach opportunities in the Sound's flood plain.** The study has identified a number of opportunities for new town and county beaches, all of which fall within the Sound's flood plain and some of which are characterized by housing which is neither structurally capable of withstanding a major hurricane, nor of being protected economically.

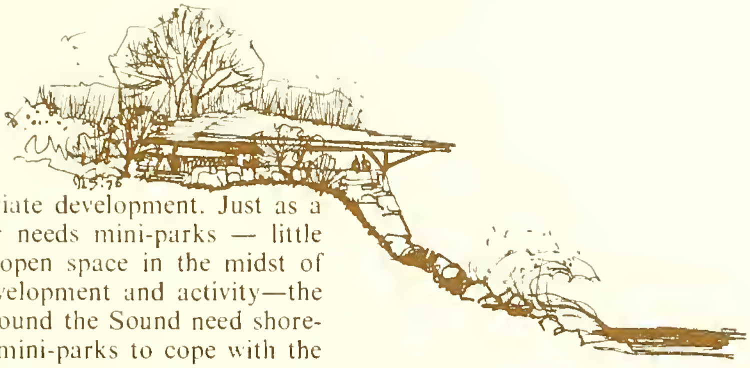
Together, the flood prone areas with recreation potential would provide almost twelve miles of beach along the shoreline. They could be acquired after a major hurricane. They include:

- *Plum Bank and Great Hammock Beach*, 0.9 mile in Old Saybrook;
- *Soundview Beach*, 0.5 mile in Old Lyme;
- *Cedar Island*, 0.1 mile in Clinton;
- *Duck Island Roads*, 1.5 miles in Clinton and Westbrook;
- *Circle and East River Beaches*, 0.6 mile in Madison;
- *Silver Sands and Momauguin Beaches*, 1.0 mile in East Haven;
- *Milford Point*, 0.7 mile in Milford;
- *Pine Creek Point*, 2.0 miles in Fairfield;
- *Area west of Stehli Beach*, 0.3 mile in Oyster Bay;
- *Asharoken*, 1.7 miles in Huntington;
- *West Meadow Beach*, 1.1 miles in Brookhaven;
- *Mount Sinai Beach*, 0.5 mile in Brookhaven;
- *Wading River Beach*, 0.6 mile in Riverhead

Other Access Points

The many streets or corridors which used to give fishermen access to the Sound for their livelihood and daily food are being lost to all of us through

Mini-parks at regular intervals around the Sound should be developed, so that the region's people will have a wide range of opportunities to enjoy passive as well as active recreation Rest areas, overlooks, and other "looking spots", as well as boat-launching areas and small lifeguard protected beaches, should be developed about every five miles, with modest parking facilities and comfortable benches



inappropriate development. Just as a great city needs mini-parks — little oases of open space in the midst of urban development and activity—the people around the Sound need shoreline and mini-parks to cope with the stresses and strains of modern life. Such areas would offer people pleasant relaxation watching the waves of passing boats, wading, picnicking, or just daydreaming.

RECOMMENDATION

Shoreline mini-parks. Each state should increase its assistance to local and regional agencies to provide public mini-parks available to the general public, without residency restrictions, about every five miles along the shore. These would be used for passive recreation and access to public land below high water for walking, wading, fishing and, where protection is provided, for swimming. Wherever possible, shared use of certain facilities, such as boat ramps and fishing piers, with existing power plants and sewage treatment plants should be developed, rather than making new purchases.

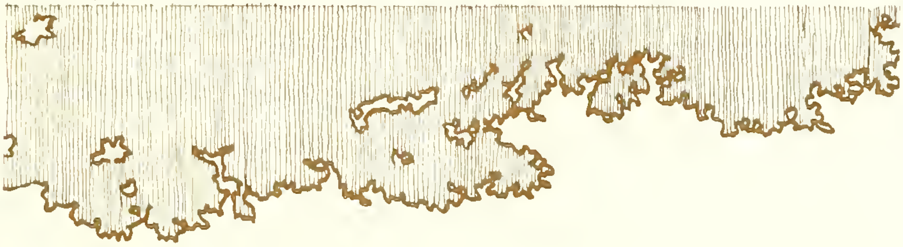
Transportation Access

Most access to public facilities on the shores of the Sound requires a private automobile. Public transportation—trains, buses, even ferries—is largely nonexistent. Those without private transportation are thus deprived of access even to public places on the Sound.

RECOMMENDATIONS

1. **Recreational ferry service.** Both states, with appropriate federal aid, should either develop or franchise the development of small, passenger-only ferries or launches to provide relatively efficient, non-destructive access to beaches, and to enhance the recreational experience. They would at the same time provide a non-discriminatory means of *limiting* public access. This ferry service should include:

Drawings by Jim Skerritt



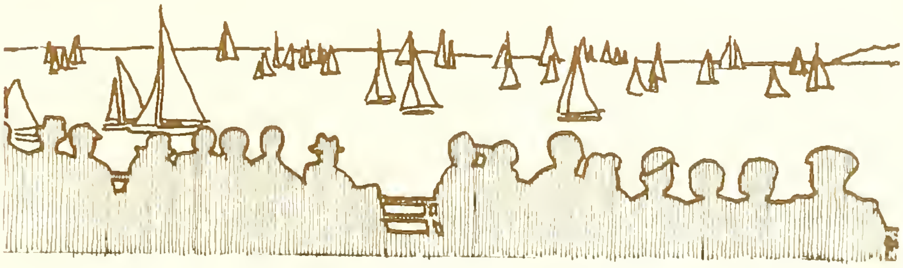


Photo by Robert Perron

Mount Misery Cove and the public parks at the mouth of Port Jefferson Harbor (above) are inaccessible to anyone without a boat. Passenger ferries like this one could provide limited access, so that people could enjoy these unique areas without destroying the fragile environments there. The proposed recreational ferry service locations are shown in Chapter 6, Ferries and Bridges

Photo by Ingbert Gruttner

- Bluff Point Park to Ram Island;
- Essex to River Islands and Seldon Neck;
- New Haven to Lighthouse Point Park;
- Bridgeport to Pleasure Beach;
- Norwalk to Sheffield Island;
- New Rochelle to David's Island;
- Orchard Beach to Orchard Beach Island;
- Fort Totten to Caumsett State Park;
- Oyster Bay to Caumsett State Park;
- Port Jefferson to spits at the harbor mouth.

2. **Mass transportation.** The Connecticut Department of Enviromental Protection and the Long Island State Park Commission should eventually eliminate all bus parking and access limitations to the Sound's state parks. In addition, both states' Departments of Transportation should immediately encourage coordinated mass transit scheduling for quicker and more efficient service to the region's recreation facilities.

Visual Access to the Sound

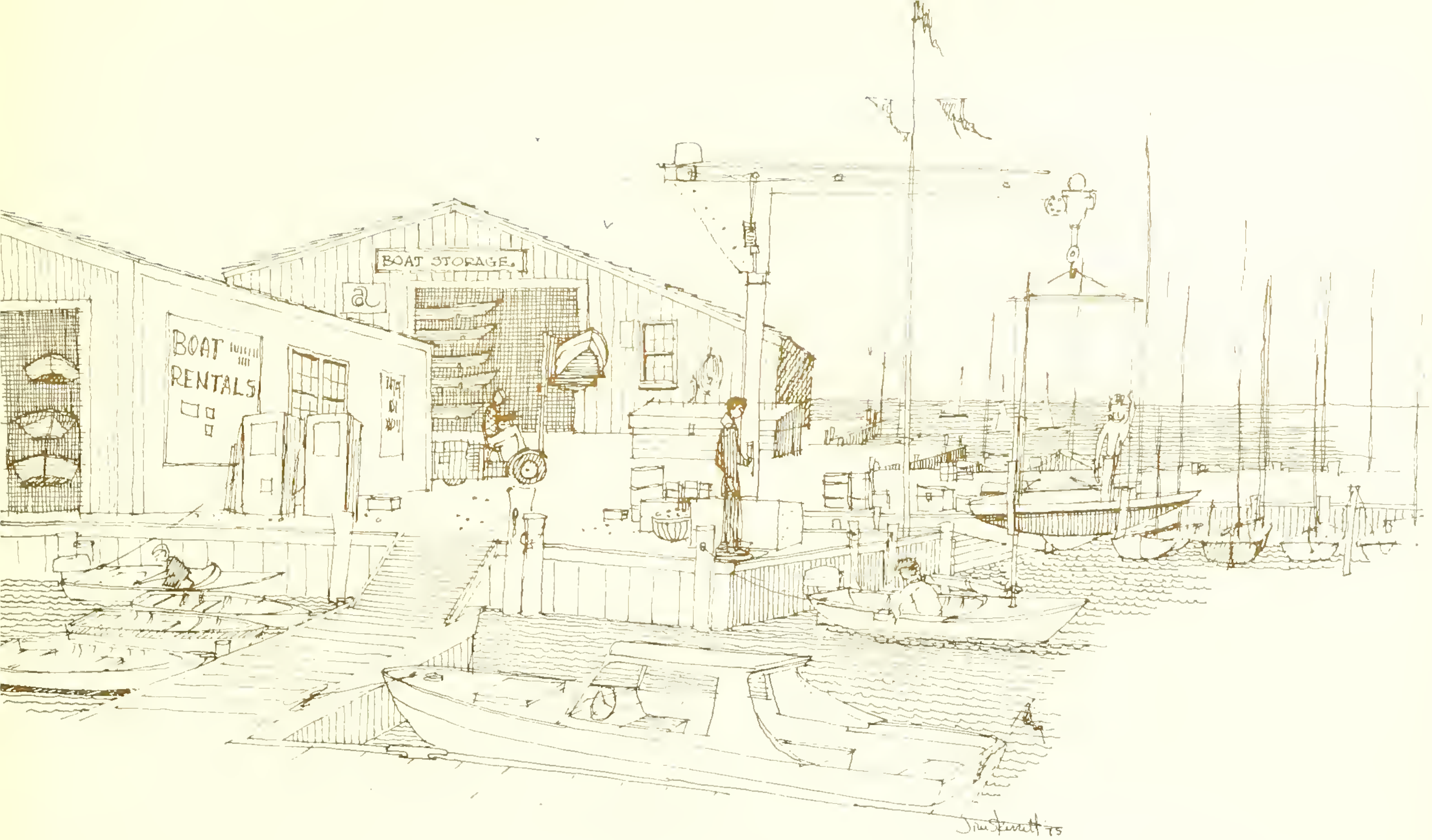
The most widespread and universal enjoyment of a body of water like the Sound is as a presence in the lives of the people around it, as they go about their daily routines. San Francisco Bay is a notable example of this. Long Island Sound has relatively few points and stretches of visual access. As a result, many residents of the region hardly know it is there.

Changing this is a very long-range proposition. Yet, until it is changed, the Sound will represent a resource that does not measure up to its capacity to improve the lives of large numbers of people. Chapter 8, The View of the Shore, suggests a number of ways to improve visual access to the Sound.

Development of Marinas and Small Boating

Regional long-term trends toward more people, higher family incomes, increased leisure time, and more active recreational pursuits all point to increasing numbers of pleasure boaters. The rapid increase in boating on the Sound in the past decade and the existing shortage of marina space tend to confirm this conclusion.

Although the open waters of the Sound can safely accommodate many more boats, a number of harbors, coves, and channels are reaching capacity. The western end of the Sound is especially congested on peak days. New marina development often conflicts with concerns for environmental conservation.



Drawing by Jim Skerritt

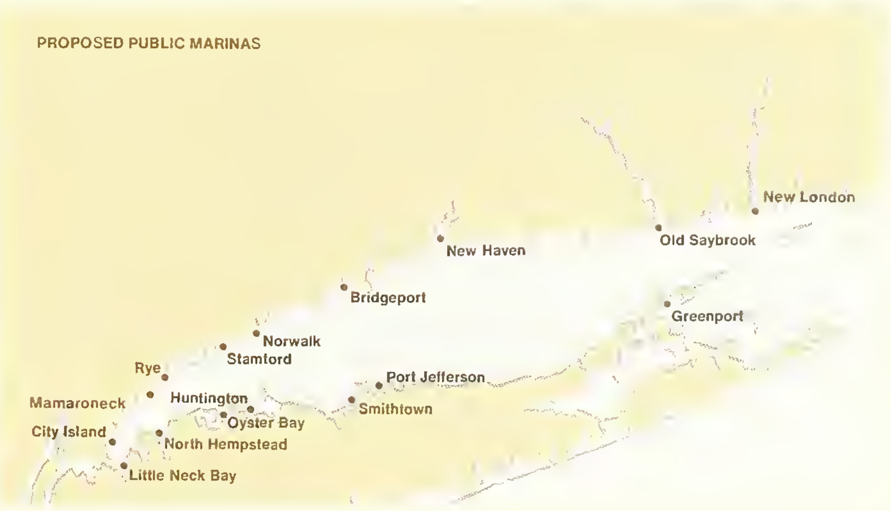
Increased congestion on the water suggests that unless ways of encouraging better basic safety among boaters are implemented, stricter rules of operation will have to be imposed, much in the same way that increasing automobile populations required stricter operator licensing, traffic controls, and vehicle inspection.

The nature of pleasure boating is such that most boats do not go out on most days during the season. It is only on a few peak days that the fleet takes on unmanageable proportions. This suggests that many more people could enjoy boating on the Sound, without substantially increasing the number of boats to be accommodated, if boat sharing and boat rentals increased significantly.

RECOMMENDATIONS

1. **Operator certification.** The New York and Connecticut Legislatures should amend existing legislation which requires safety certification of junior boat operators to include **all** boat operators. Power Squadron and Coast Guard Auxiliary courses could be utilized for this purpose.
2. **Small harbor study.** The U.S. Army Corps of Engineers, working with the Coast Guard and local harbormasters, should develop detailed small boat harbors studies for each of the Sound's recreational harbors, coves, and embayments. Such studies would indicate and evaluate all authorized or proposed channels, navigational aides, and boat storage facilities, balancing the need to protect some particularly sensitive areas with the growing demands for boat storage and use.
3. **Public marinas.** As a counterpart to state launch ramps for boat owners, the following municipalities should develop, with state and federal aid, public marinas to permit non-boat owners to enjoy the pleasures of the open water: New London, Old Saybrook, New Haven, Bridgeport, Norwalk, Stamford, Rye, Mamaroneck, New York City

Public marinas around the Sound could give many more people the opportunity to get out on the water by renting small sail and low-power boats at reasonable prices. The map (below) shows the proposed locations of these public facilities



Open space, both on the shores of the Sound and in upland areas, should be preserved wherever posible, to provide "breathing space" for an increasingly dense urban region.

(City Island, Little Neck Bay), North Hempstead, Oyster Bay, Huntington, Smithtown, Port Jefferson, and Greenport. These could include small sail and power boat rentals, launch ramps, hoists, slips, moorings, and launch service.

Recreation and Open Space

The shoreline of the Sound cannot accommodate all of the region's demands for recreation, particularly in Connecticut, where that shoreline is quite limited. To deflect some of the demand from the shoreline, and to strengthen Connecticut's existing system of inland open space, new sites will have to be acquired or developed.

For the most part, these sites are situated within a potentially-linked open space system consisting of selected "special opportunity" lands or undeveloped prime natural resource components, such as wetlands, streambelts, prime agricultural and forest land, and steep slopes.

RECOMMENDATIONS

1. **An open space system.** All levels of government in Connecticut and New York should recognize and protect the open space system, consisting of the special opportunity natural resource lands shown in the Land Use and Critical Natural Resources Map. Linkages of major elements within the system could be made by developing walking paths and bikeways. Insuring the protection and optimum use of this system may require a number of governmental actions, such as protective regulation, tax incentives, zoning bonuses, and in some cases purchase.

2. **Key Connecticut open space acquisitions.** Connecticut should purchase about 8,000 acres of prime open space land over the next twenty years. These areas appear to have the potential for at least 4,000 picnic sites, 1,200 camp sites, and some inland swimming opportunities. Acquisition and development of all 8,000 acres have been estimated to cost about $40 million. The sites are shown in the map folio beginning on page 61.

Photo by Perry Ruben

Even with much more access, the Sound cannot meet all of the regions recreational demand Upland sites, such as water utility lands, must be developed so that the capacity of the Sound to provide satisfying recreational experiences will not be exceeded

3. **Water utility lands.** Connecticut should work with private water utilities to develop limited hiking and picnicking facilities on selected watershed lands. Recommended development is indicated in the map folio, page 61.

4. **Right of first refusal.** Both states should adopt legislation which would provide first local, then state right of first refusal on any private recreation area up for sale, in exchange for favorable interim tax treatment. This would include beach clubs, marinas, golf courses, country clubs, and tennis courts

Funding Increased Access

The cost of these acquisition and development recommendations will be millions of dollars. Federal cost sharing may be achieved by means of the proposed Heritage Fund, the Land and Water Conservation Fund, The Community Development Act, or other programs as appropriate. Connecticut and New York, however, may have to find new ways to fund these major recommendations, if significantly increased access to the Sound is to become a reality.

RECOMMENDATION

State funding. Each state should set aside bond money or other appropriate funds for:

- its 25 percent of the Heritage cost—about $10 million in Connecticut and $7 million in New York;
- development of shoreline mini-parks;
- rereation areas other than on the shore;
- assistance to local governments for flood plain acquisition, as opportunities permit;
- special acquisition opportunities, such as flood-devastated areas, water company lands, and private estates and clubs which become available for purchase;
- securing development rights and scenic easements

Photo by Perry Ruben

Photo by Ingbert Gruttner

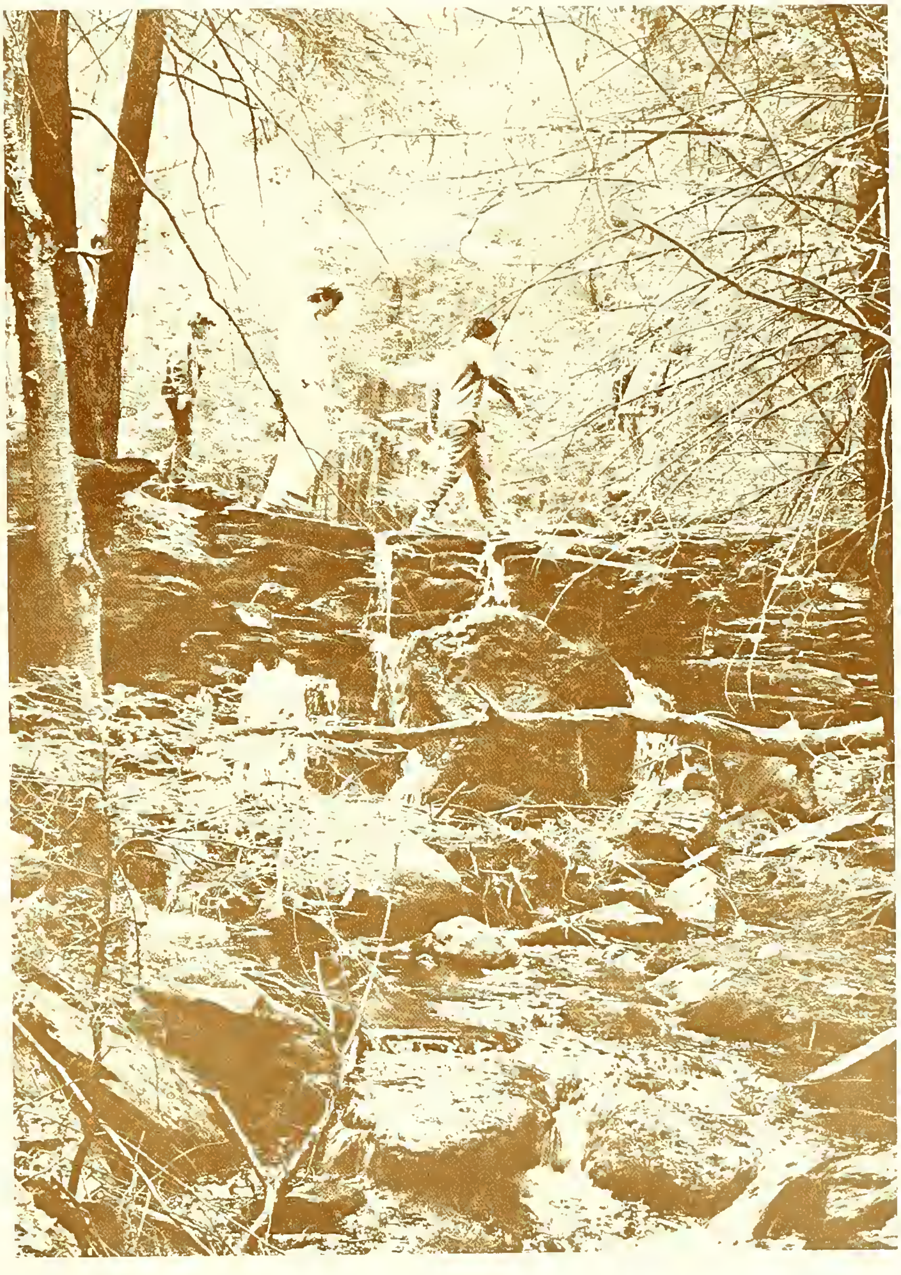


Photo by Ingbert Gruttner

Sport fishing is a popular activity on Sound, enjoyed by more people every year. Effective management and research on migratory fish such as striped bass, blues, and weakfish, will help guarantee good fishing on the Sound for years to come.

Fishing the Sound

Chapter Four

HIGHLIGHTS

To learn more about the Sound's fishery resources and to provide better access to those resources, the Study recommends the following actions:

HIGH PRIORITY

1. Strengthen existing shellfish management/research programs by- -
   - providing long-term oyster bed leases
   - eliminating arbitrary bushel and peck limits
   - monitoring shellfish harvest
   - encouraging more intensive aquaculture
   - reopening selected closed shellfish beds
2. Begin a resident fish management/research program by - -
   - developing catch and size limits for the winter flounder
   - conducting research on this and other resident species

MEDIUM PRIORITY

3. Strengthen existing migratory fish management/research programs by - -
   - developing regulations for striped bass, bluefish, and weakfish
   - conducting a five year research program
   - identifying other "manageable" species
   - evaluating the need for a salt water fishing license
4. Increase access to fishermen through - -
   - providing access to existing structures, breakwaters and groins
   - developing fishing piers at ten locations
   - developing artificial reefs at six locations

OTHER RECOMMENDATIONS

5. Pilot shellfish/sewage treatment project
6. Increasing hard clam and scallop harvest

For nearly a million people, fishing in the Sound has been great in recent years. We don't know why, or how long it will last. And we're not doing enough to find out. We do know that shellfishing could be a lot better, and we have a pretty good idea how to improve it.

Finfishing

Sport finfishing is one of the most important activities on the Sound. Its rapid growth in recent years is expected to continue. Striped bass and bluefish are among the most prized sport fish catches. Commercial finfishing, on the other hand, has been declining due to reduced fishing effort and regulations prohibiting commercial fishing in some parts of the Sound.

There are two types of finfish in the Sound: resident species which spend most of their lives here, such as winter flounder and tautog; and migratory species like striped bass, bluefish, weakfish, Atlantic mackerel, shad, scup or porgy, and summer flounder or fluke. This migratory group includes virtually all of the popular sport fish. Because these species do not spend their entire life cycles in the Sound, it is more difficult to study and manage them.

Photo courtesy *Long Island Press*

As a result, we do not know why finfishing has been so good in recent years in the Sound. We don't know if blues and stripers will continue to come into the Sound. We can't even tell if any of these species are being over fished now, because our counts of sportfish catches are only rough and infrequent estimates. With effective management and research of the fishery, we could at least determine whether we have overfishing problems, how serious these are, and how to overcome them.

RECOMMENDATIONS

1. **Strengthen existing migratory fish management and research programs.** The Northeast Marine Fisheries Council should recommend that the National Marine Fisheries Service and the Atlantic coastal states provide funding to begin coordinated management programs for striped bass, bluefish, and Atlantic weakfish to:

- review all existing biological information and propose initial regulations to the Atlantic states for fishing these species;
- conduct research on spawning and nursery areas;
- gather additional data on commercial and sport fisheries and needed biological parameters on these species to provide a basis for possible catch and size limit regulations after five years;
- re-evaluate commercial fishing regulations for these species after five years.

At the appropriate time, this program should be extended to other important migratory sport and commercial species.

The Council should also review the advisability of an Atlantic states saltwater fishing license to raise revenue for the above program and facilitate its gathering of fishing statistics.

2. **Establish a resident fish management and research program.** Connecticut and New York should jointly gather new commercial and sport fisheries data for winter flounder and recommend catch and size limits as required. In the future, the program should be extended to include other resident finfish species, such as the tautog.

Improved Fishing Access

Access to the waters of the Sound for fishing is also a problem. Finfishing opportunities in the Sound are severely restricted for those who don't own a boat. Fishing piers are few and often crowded. Breakwaters and jetties are sometimes barred to the public. It is not easy to find boats to rent. And natural fish habitats, such as reefs, are not present in many areas that are accessible to the public.

RECOMMENDATIONS

1. **Use of existing structures.** New York and Connecticut should take steps to open up to fishermen existing groins, breakwaters, and jetties under public ownership or regulation, or built with federal assistance. Power plants and other publicly regulated facilities should be encouraged to open up existing piers, breakwaters, and seawalls to public fishing, consistent with public safety.

2. **New and improved structures.** A program of improving existing fishing piers and building new ones should include the following:

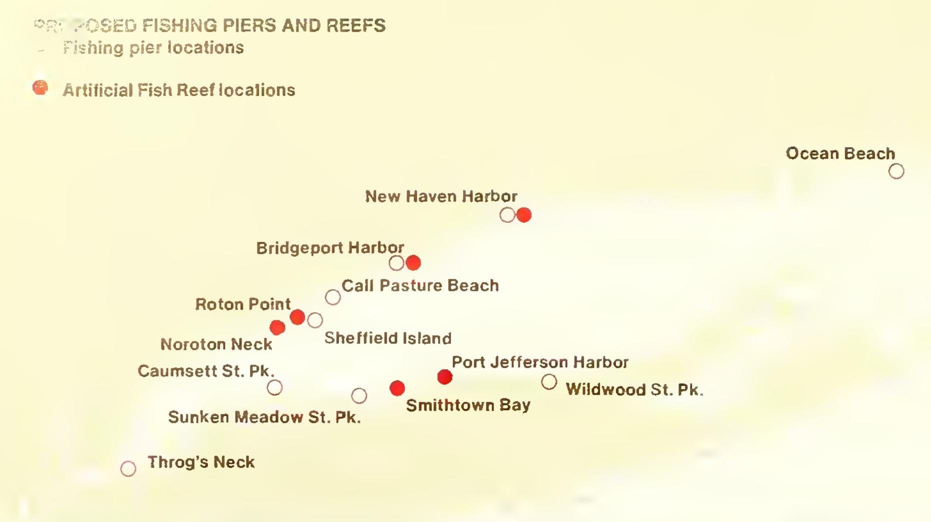
- New London should build fishing piers at Ocean Beach;
- New Haven should build fishing piers in the City Point area;
- Bridgeport should proceed with its plans for two additional fishing piers, and investigate other sites;

Photo by Ingbert Gruttner

Commercial finfishing (above left) is best at the eastern end of the Sound, although the overall commercial catch has declined in recent years. A program to gather biological facts and statistics on both migratory and resident fish caught in the Sound would lead to sensible regulations for catch and size limits

Fishing on the Sound would be much better if conditions weren't so crowded in the few areas available to the public (above). Power plants and other facilities could open up existing piers and seawalls to public access. In other areas, new piers should be built and existing ones improved

Photo by Perry Ruben



- Norwalk should build a fishing pier at Calf Pasture Beach, and Connecticut should build fishing piers on Sheffield Island after its acquisition;
- In Mamaroneck, Westchester County should proceed with the extension of the existing fishing pier, and the city should build a pier at Harbor Island;
- New York City should build fishing piers near the Throg's Neck Bridge, and improve and expand the existing facility on City Island;
- On the north shore of Long Island piers should be developed at all state parks.

3. **Artificial reefs** should be constructed, possibly in conjunction with fishing piers, in New Haven Harbor, Bridgeport Harbor, Noroton Neck, Roton Point, Smithtown Bay, and Port Jefferson Harbor.

Shellfish

The Sound is well-suited for the production of oysters, hard and soft clams, scallops, mussels, and conch. But what has historically been both a profitable commercial industry and a popular recreational pastime has declined significantly as a result of water pollution, poor natural supplies of seed oysters, the destruction of shellfish beds and, in the case of hard clams at least, overfishing. Consequently, a resource which could provide recreation and at the same time a much greater output of good food, is falling far short of its potential.

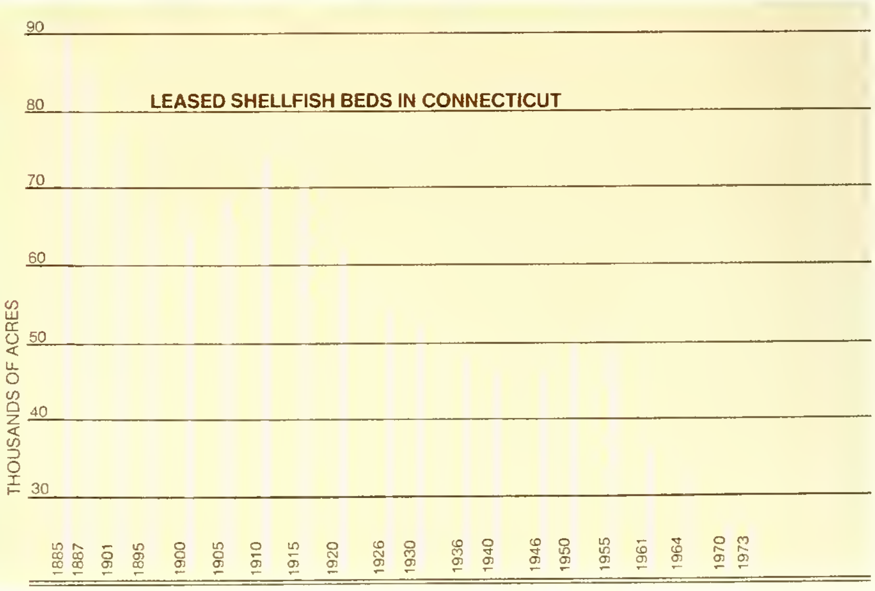
This is ironic, because shellfish are among the easiest species to manage for optimum yield. They stay in one place for most of their lifetime. Shellfish aquaculture, the farming of shellfish, is already practiced in the Sound. Such techniques are capable of adding to the world's supply of high protein foods, making it all the more important that we begin to manage the Sound's shellfish resources more effectively.

Oysters offer the best opportunity for increased harvesting of any shell-

Photo by Peter Barlow

Photo by Ingbert Gruttner

Recommended fishing piers and artificial reefs at a number of locations on the Sound (above left) would provide much-needed opportunities for fishing. Shellfishing has been an important industry and form of recreation on the Sound for many years. Recently, however, problems of pollution, destruction of beds and in some cases overfishing, have resulted in serious declines in most shellfish production, as shown in the chart below.



fish in the Sound, because the oyster industry is well established and aquaculture techniques can be applied to it. From a low-point in the 1960s, oyster production has increased recently, as a result of improved aquaculture techniques, and could continue to do so, given proper encouragement. Major problems include poor management of oyster beds and restrictive harvest limits imposed by some towns.

Water pollution is a problem for recreational oyster and clam fishermen, who are barred from taking shellfish from polluted waters because of possible contamination. But the large commercial operator has the equipment to transplant oysters to clean waters, where they cleanse themselves.

Hard clams also represent good potential in the Sound, although aquaculture techniques are less advanced than for the oyster, due to their traditionally lower price.

Other shellfish, including mussels and conch, are of relatively little importance, chiefly because there is little demand and prices are low.

Lobsters, technically a crustacean, not a shellfish, have been harvested in greatly increased numbers in the Sound, both commercially and by noncommercial fishermen. Their potential is thought to be limited, however, due to population variations which we do not know how to control. Currently, for example, lobster catches are declining. The American Lobster Subcouncil, the Lobster Scientific Committee, and the New York State Department of Environmental Conservation are all studying lobsters with a view to better management.

RECOMMENDATIONS

Strengthen existing shellfish management and research programs. The states, towns, and local research institutions should make every effort to encourage an expanding shellfish industry, by bringing existing shellfish beds under proper commercial management.

1. **Manage shellfish beds.** Towns should encourage commercial fishermen to manage the shellfish beds under town jurisdiction by making uniform long-term leases for deep water oyster beds available to the commercial oystermen. Arbitrary bushel and peck limits in town waters should be replaced with new limits designed to maintain optimum sustained yield.

Photo by Ingbert Gruttner

If carefully managed, the Sound's shellfish beds could be far more productive than they are now Management techniques should include flexible quota systems, improved methods of aquaculture, and uniform size limits to prevent overfishing

2. **Monitor shellfish beds.** Connecticut and New York should be responsible for comprehensive monitoring of all shellfish beds in the public domain, including those under local jurisdiction, to determine productivity, conditions affecting set, and effects of harvesting pressure. Flexible quota systems and uniform size limit regulations, based on reliable harvest data and backed by effective enforcement, could help to prevent overfishing of the public beds.

3. **Intensive aquaculture.** The states, in cooperation with local research institutions and NOAA's Milford Laboratories, should explore the possibilities of more intensive aquaculture methods, such as submerged raft culture and pond culture. Research programs in oyster genetics, oyster diseases, methods of natural control of predators, and reasons for variations of natural sets should also be strengthened. In addition, NOAA's Milford Laboratories should continue their contacts with local and state agencies and private interests to disseminate information on improved methods of oyster culture.

4. **Revoke shellfish leases.** The states and towns should adopt mechanisms for revoking shellfish leases where the leased bottom is not being used. For instance, a leased area could be opened for bids if it has not been managed for a stated period of time, as set by state and local authorities.

5. **Hard clam and scallop aquaculture.** In those areas of the Sound that are not naturally ideal for oyster production, the states should promote aquaculture methods for the management of other shellfish, such as hard clams and scallops.

6. **Pilot shellfish project.** Connecticut's Aquaculture Division of the Department of Agriculture, in cooperation with local universities, should find a candidate town with which to initiate a pilot project of growing shellfish with sewage wastes, as a part of that town's sewage treatment system.

7. **Re-opening shellfish beds.** The states should identify those areas along the coast where a relatively small modification in the way sewage is handled would result in compliance with the health code, and the possible re-opening of shellfish beds for recreational harvest. In addition, new criteria—such as the fecal coliform standard—for closing shellfish beds, should be adopted in place of the present standard of total coliform density.

Photo courtesy *On the Sound* Magazine

The Sound at Work

Chapter Five

Photo courtesy *On the Sound* Magazine

HIGHLIGHTS

To provide an adequate supply of necessary services now and for future generations the following actions are recommended - -

HIGH PRIORITY

1. Require energy conservation program, including.
   - raising insulation requirements in building codes
   - reducing heating and cooling levels in public buildings
   - reducing lighting levels in major buildings
   - labeling high energy-use appliances
2. Consolidate ports from eighteen to five by
   - constructing three offshore berths
   - developing and extending pipelines
   - dredge New Haven Harbor to forty feet
   - limit size of tankers entering Sound

MEDIUM PRIORITY

3. Maintain "self-sufficiency" in regional power generation
4. Provide most electricity by atomic energy until at least 1990
5. Develop new public port authorities in each State
6. Adopt improved minerals conservation and development policies
7. Study feasibility of marine mining in Sound

OTHER RECOMMENDATIONS

8. Tank farm relocation
9. Port Washington sand pit reclamation
10. One-stop power plant licensing
11. Tax incentives for new energy forms use
12. Cooling water impacts research
13. Undergrounding certain transmission lines

Electric generating plants, sand and gravel operations, oil terminals, and other facilities are all essential to our health and way of life. We've either got to find ways to live with many more of them, or change our way of life.

Electric Power

Electric power generating plants, whether nuclear of fossil fueled, need large amounts of cooling water. Long Island Sound is one of the largest cooling water sources in the Northeast, and plants around it produce about 30 percent of the power used in the surrounding service area. Consumption of power has been growing at about 6 percent a year. It is expected that it will continue to grow perhaps at a somewhat slower rate, as regional population and incomes increase and as people continue to choose electricity over other forms of energy. The result could be a fourteen-fold increase in the power supply during the next fifty years, with very significant possible consequences for the shoreline and waters of the Sound.

Only the most stringent energy conservation measures, much higher prices for electricity, or a combination

Nuclear generating plants, like this one under construction at Shoreham on the North Shore of Long Island, will probably be needed to meet any new base load requirements until more acceptable generating techniques become available.

of the two, could substantially reduce growth rates and the resulting need for increased generating capacity. And since the social and health consequences of an inadequate supply of electric power could be as bad or even worse than the adverse effects associated with its generation, such measures would have to be applied so as not to create power shortages and the hardships that usually go with them.

Future energy technology such as solar power and wind or wave action, may significantly reduce the adverse effects of power generation and distribution on the Sound and the land around it, although no one can be sure. Certainly none of the technologies currently being researched could be commercially available sooner than 1990, in any event. And present fossil fuel generating methods have serious drawbacks. Oil-fired plants are dependent on unreliable and expensive foreign oil sources. Many coal-fired plants cause air pollution in excess of present federal air quality standards, and reducing this pollution significantly could substantially increase the cost of electricity. Despite the many concerns about nuclear power generation, it appears to be the least objectionable alternative for most additions to base load generation until 1990.

In the meantime, sensible energy conservation measures are capable of reducing the number of new plants needed until more environmentally or publicly acceptable forms of electric power generation become available.

RECOMMENDATIONS

1. **Energy conservation.** The New York Public Service Commission and the Connecticut State Energy Office, in cooperation with the Federal Energy Administration, should establish state electric energy conservation goals and recommend programs to achieve them. The success of the program will depend in large part on public awareness and willingness to conserve energy. Large electrical energy savings can occur through:

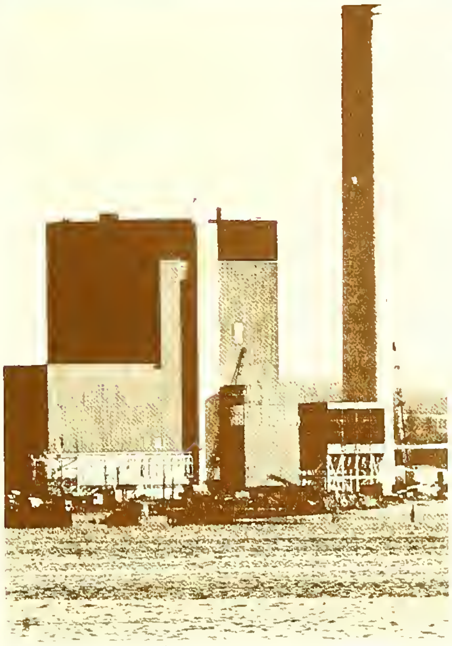
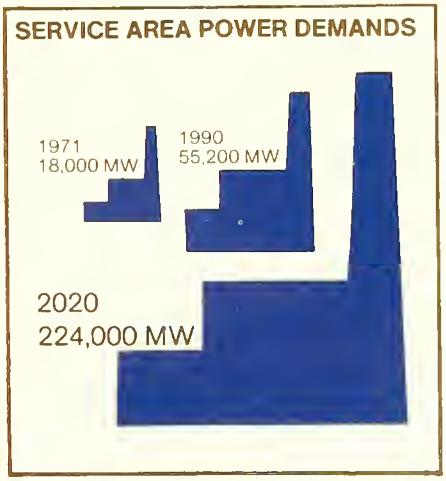
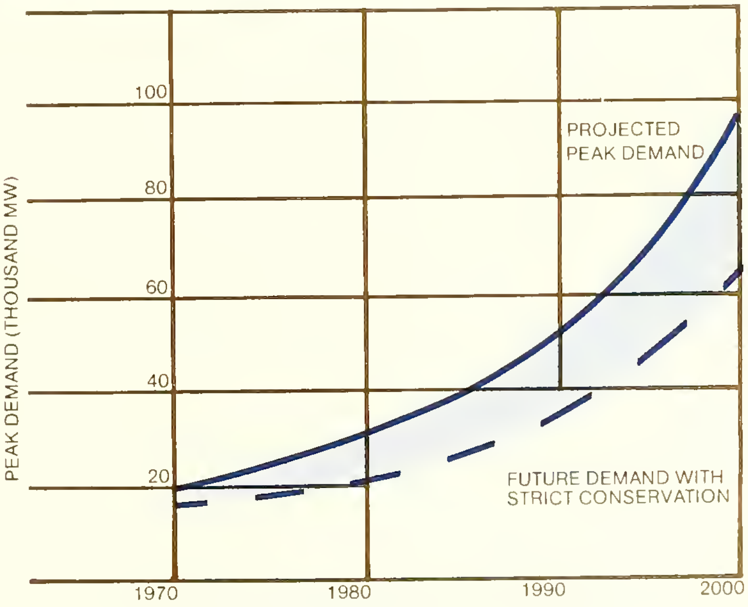


Photo by J R Selleck

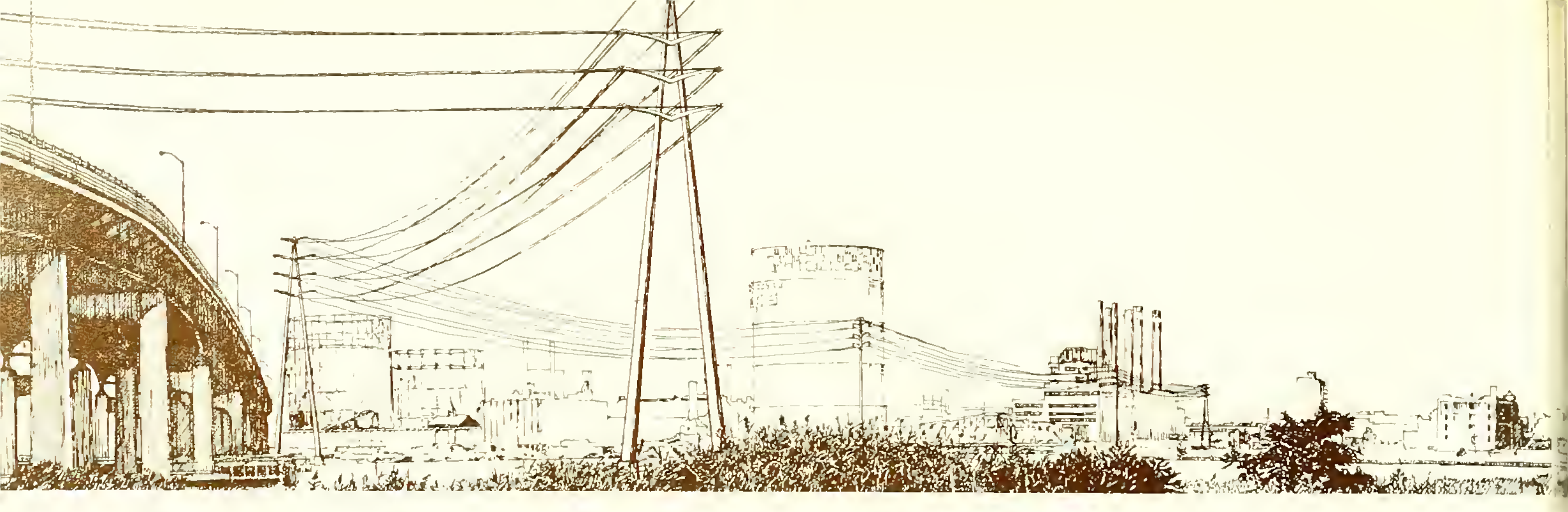


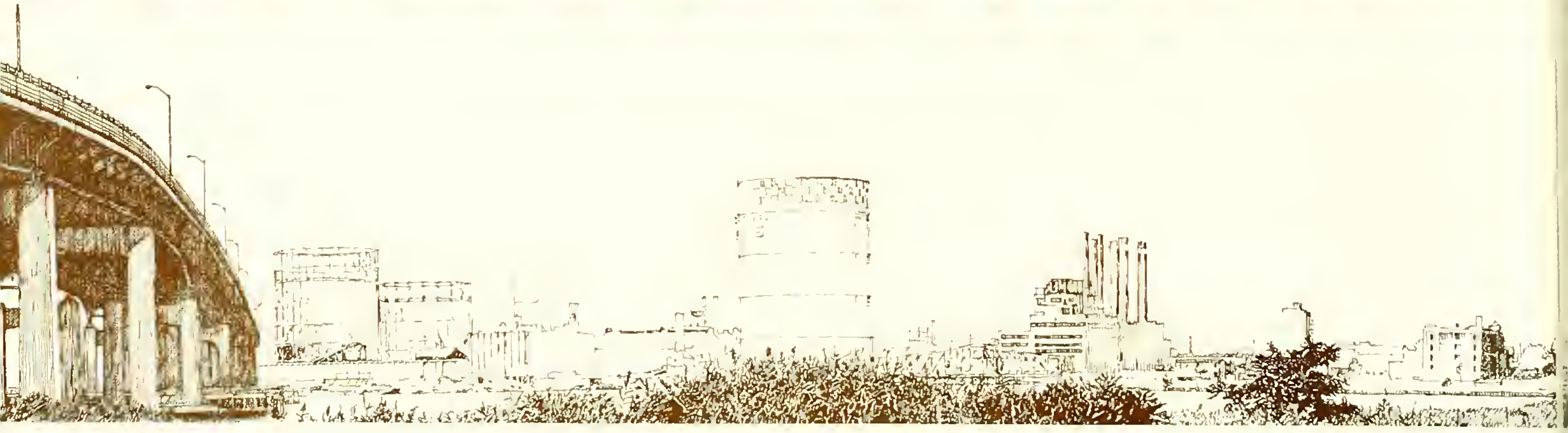
SERVICE AREA POWER DEMANDS

If power consumption continues to grow as it has over the past 20 years, we face a 14-fold increase by 2020 (diagram above) But conservation measures can hold down that growth (graph below), as we have learned in the last year



PROJECTED POWER REQUIREMENTS
LONG ISLAND SOUND SERVICE AREA





Drawings by Frank Pannenborg

- mandatory increases in insulation requirements and architectural standards in all new homes;
- mandatory reductions in cooling and heating levels in all public and commercial buildings;
- mandatory reductions in lighting levels in public commercial and institutional buildings and highways;
- mandatory reductions in display lighting on bridges, public buildings, supermarkets, and outdoor advertising;
- labeling and taxing low efficiency, high energy use devices, such as air conditioners, heaters, and freezers;
- use of waste heat in the design and operation of all new public buildings;
- incentives to industry to reexamine production techniques;
- utilization of refuse as fuel in power plants and large industrial complexes;
- reduction of peak-hour use through a graded rate system, such as that used by the telephone company for long distance calls.

2. **Energy resource conservation.** State electric energy conservation programs should be consistent with the conservation of other energy resources, particularly oil and gas. Neither can be at the expense of the other.

3. **Share of total capacity.** The Long Island Sound region should continue to be self sufficient by producing from 30 to 35 percent of the larger service area's total electrical energy needs. The region should be neither a net importer nor a net exporter of electric power.

4. **Reliance on nuclear energy.** The study acknowledges the continuing public concern about the safety of nuclear power plant operations, fuel transfer, and disposal. This raises serious questions about the present and future hazard or safety of nuclear generating plants. These problems and their solution, however, go well beyond the scope of this study and are, in fact, the subjects of extensive research not yet completed. Assuming a satisfactory resolution of these problems, the study recommends that the utilities provide all or most of the base load additions in the service area with nuclear power facilities, until 1990, or until suitable new forms of energy production become available.

5. **Recreation at generating sites.** For all proposed new generating units along the Sound or other water bodies, the Connecticut Power Facilities Evaluation Council and the New York Public Service Commission should require the utility to provide recreation and public access to the water, consistent with federal and state safety standards.

6. **Research and development programs.** The New York State Public Service Commission and Connecticut's Energy Office should recommend to the utilities what percentage of their total resources should be used for research and development and suggest some priorities. In addition, they should carry out studies to determine the socioeconomic impact and burdens of present rates, the price elasticity of power demand, the possible effects of restructuring the rate system, and other measures for the more equitable distribution of costs.

7. **Design standards for future power plants.** The proposed state coastal zone management entities should develop, in conjunction with the Connecticut Power Facilities Evaluation Council and New York Public Service Commission, site selection, site planning, and design criteria for all new power plants in or affecting the coastal zone.

The undergrounding of transmission lines in developed areas along the coast greatly improves the looks of these areas, as the "before and after" illustrations (left) of New Haven show

Shoreline Appearance and Design: A Planning Handbook prepared by this study will provide useful guidance. See Chapter 8, The View of the Shore. All such state standards for nuclear power plant siting and design must be compatible with standards established by the federal Nuclear Regulatory Commission and requirements of other federal agencies.

8. **Fund for undergrounding selected existing transmission lines.** New York and Connecticut should establish a program for undergrounding selected existing overhead transmission lines, particularly those on or adjacent to the Sound's urban harbors.

9. **Tax incentives for energy conversion.** Congress and the New York State Legislature should encourage the development and utilization of new forms of electric energy generation, by establishing personal and corporate income tax deductions to offset a portion of the capital costs of installing energy converters, other than those using fossil and nuclear fuels. This should help encourage investment into creative research and provide greater market security for companies considering investing in production facilities for these products.

10. **One-stop licensing.** A federal-state inter-agency mechanism, which would include the Power Facilities Evaluation Council in Connecticut and the Public Service Commission in New York, should be established to act with finality, subject to due process, on power plant siting. It should operate a unified one-stop procedure for federal and state licensing requirements. In addition, administrative procedures should be substituted for the initial adversary process in the courts, which often requires too much time and is inadequate to cope with the complexities of the engineering and ecological problems involved. These steps will hopefully shorten the lead time for new generating facilities by several years.

11. **Research on effects of once-through cooling.** Until the cumulative effects of impingement, entrainment, and thermal additions on the Sound's ecosystem are thoroughly understood, all levels of government should continue to support and encourage research and additional study of the effects of the intake and discharge of cooling waters on the Sound.

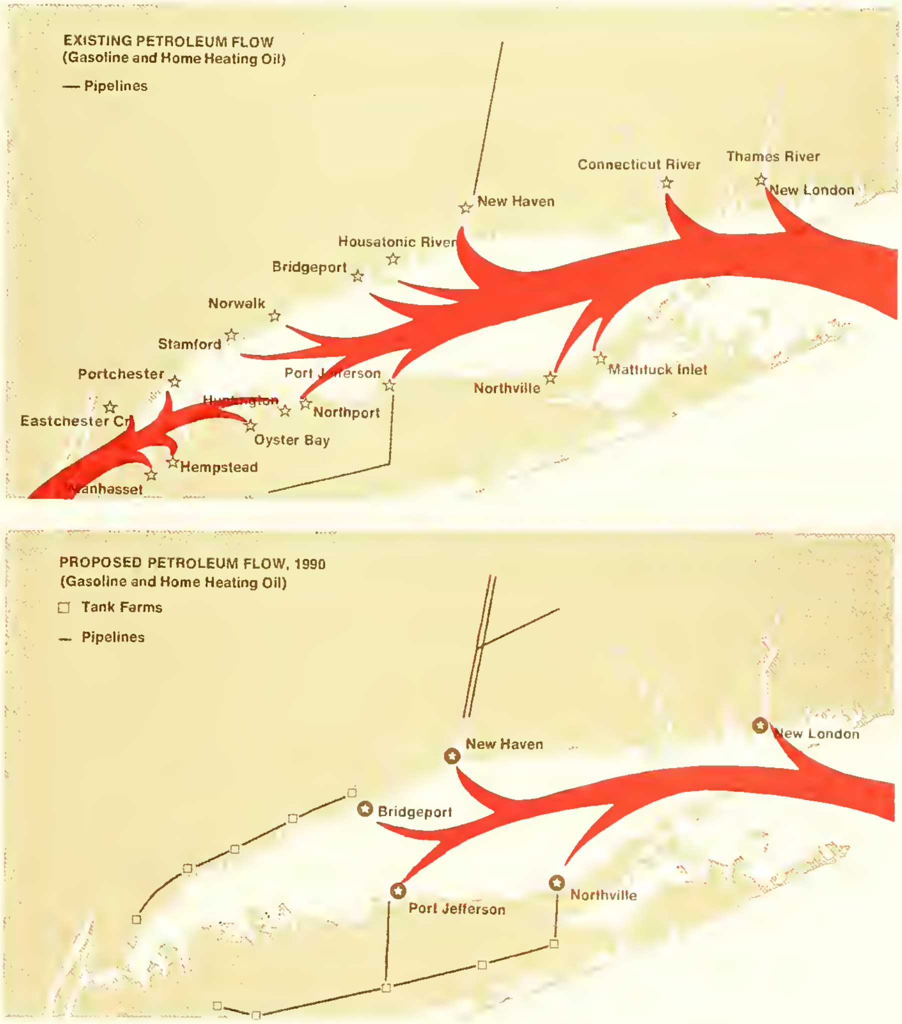
Marine Transportation

Petroleum products supply our region with more than three-quarters of its energy needs. We use them to run most of our transportation, heat most of our buildings, and generate most of our electricity. Despite recent shortages and increased prices, the region will continue to depend on this form of energy for many years to come.

Virtually all of the refined petroleum products used in Connecticut and Long Island are shipped on the Sound and unloaded, stored, and distributed from eighteen Sound ports. This inefficient system increases the probability of oil spills, necessitates the dredging of harbors and channels, takes up valuable waterfront land with terminals and huge tanks, and increases truck traffic on highways. Furthermore, it increases the cost of these necessary products.

RECOMMENDATIONS

1. **Port consolidation.** To reduce vessel trips, oil spillage, dredging, highway congestion around the ports, shorefront land consumption by storage tanks, and fuel cost to the consumer, petroleum receipts should be concentrated in five ports: New London, New Haven, Bridgeport, Port Jefferson, and Northville. The remainder of the ports may continue to receive some residual oil, sand and gravel, stone and other bulk cargoes, but gasoline and distillate oil receipts there should be phased out. To accomplish these goals, the following actions are recommended:



Consolidating the petroleum receiving and distribution facilities around the Sound from the existing 18 (upper map), down to just five (lower map) would reduce the likelihood of oil spills and free up waterfronts for other uses.

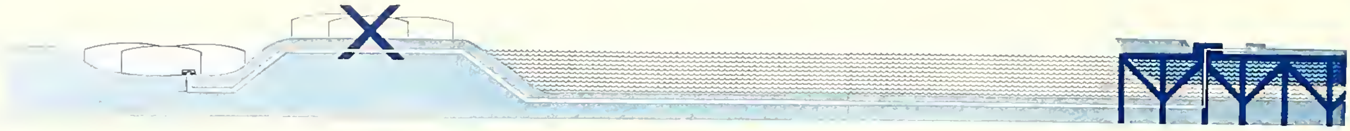


Photo courtesy On the Sound Magazine

- *Offshore berths.* Offshore receiving terminals and submarine pipeline shore connections could be developed at New Haven by 1985, at Port Jefferson by 1985, and at Bridgeport by 1990, if required.
- *Pipelines.* Full use should be encouraged of existing pipelines from New Haven to Chicopee, Massachusetts, and Port Jefferson to Holtsville and Plainview on Long Island. New "clean" product lines should also be built; one extending the existing Holtsville-Plainview pipeline eastward to Northville and westward into mid-Nassau County by 1980; a second line from New Haven north to the Hartford area by 1990, and a new line from Bridgeport to the Bronx by 1995. If it proves infeasible to extend a pipeline into Nassau County, an offshore berth should be considered for Hempstead Harbor. In addition, two new "hot" lines, to carry residual oil from New Haven to Middletown and Bridgeport to Devon, should be built by 1985.

Oil tanks at the water's edge could be moved inland and serviced by pipeline from offshore berths, where tankers could moor and discharge their cargoes (See diagram above). Although oil rigs like this one (left) will never be seen in the Sound, they may eventually be constructed on the Outer Continental Shelf This could cause severe development and environmental problems around the Sound--and especially on Long Island--wherever staging areas for assembling and supplying these massive rigs are located

Photo by J R Selleck

- *Deepen channels.* New Haven's channel should be deepened to forty feet when the Middletown hot line is completed. Channels at Bridgeport, New London, and Port Jefferson could be deepened if the improvements were justified by a substantial increase in bulk cargo traffic. It should be noted, however, that channel deepening represents one interim solution for relieving the existing congestion at Port Jefferson Harbor. In order to fully evaluate this option, the U.S. Army Corps of Engineers should quickly complete its current investigation of feasibility and environmental impacts.
- *Limit tanker size.* The currents and shoals at the entrance of the Sound represent natural hazards to safe navigation for very large petroleum-laden vessels. Developers of offshore berths should therefore be required to file an environmental impact statement indicating, among other things, proposed vessel size, routes, and provisions for safety and maneuverability. In no event should tankers larger than 150,000 dead weight tons or drawing more than fifty-five feet be permitted in Long Island Sound.

The result of this port consolidation should be a faster, cleaner, safer, and cheaper distribution of goods in the region. Nearly all shipping west of Bridgeport and Port Jefferson, except to oil-burning power plants, would be phased out, as would oil barge traffic on the Connecticut and Housatonic Rivers, thus eliminating the need for dredging to depths greater than those required for recreational boating. The plan would also reduce federal channel dredging requirements by several million cubic yards, for substantial savings to the taxpayer over the next twenty years.

2. **Establish petroleum receiving and distribution authorities.** New York and Connecticut should each establish a petroleum receiving and distribution authority (PRDA) or lodge appropriate authority within existing agencies. In either event, they would be responsible for constructing offshore oil terminals and pipelines, siting new oil tank farms, and leasing these facilities to petroleum distributors. Such authorities should be publicly appointed and include among others, representatives of the general public, local officials, private industry, and the U.S. Army Corps of Engineers. Through powers of bonding and condemnation, these authorities could raise funds, acquire rights of way, and construct key facilities, particularly the pipelines, more efficiently than the private sector. The PRDAs, in cooperation with the energy agencies of the two states, would also monitor trends in power production and consumption.

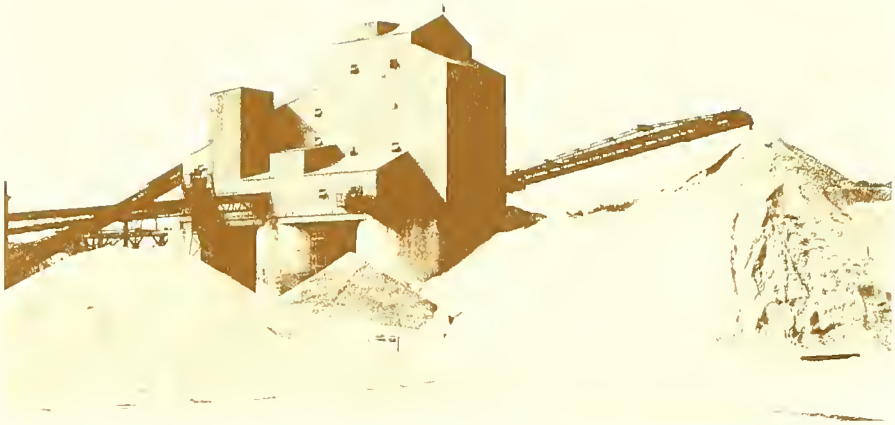


Photo by Ingbert Gruttner

Deposits of sand and gravel are geologically abundant around the Sound. But they must be mined before development precludes their exploitation, if the region is to have the necessary supplies of these construction materials at economically viable prices

3. **Relocate tank farms inland.** The PRDAs should develop new oil tank farm sites which satisfy all environmental regulations, and recommended design criteria such as those contained in Chapter 8 and in the study's separately published *Shoreline Appearance and Design: A Planning Handbook.* The effect of this would be to encourage the gradual relocation of existing waterfront storage tanks inland, and provide additional sites for needed expansion. Relocation should proceed consistent with the coastal zone plans being developed by each state.

Mining

Sand, gravel, and stone mining affects the Sound in several ways. Most of these minerals are shipped in barges on the Sound. Extraction occurs both near the shoreline and under the Sound's waters, although no marine mining operations are currently going on. This industry provides essential construction materials for the region's building projects.

Although these minerals are abundant around the Sound, restrictive municipal regulations hamper production. Many municipalities condone the pre-emption of land where deposits are located for other development uses, before the minerals can be extracted. Failure to produce sufficient supplies within the region will result in much higher prices, adding to the already rapidly rising cost of construction. It might also defer needed construction projects in the area.

RECOMMENDATIONS

1. **Minerals conservation and development.** Connecticut and New York should establish programs and regulations to foster the sequential use of mineral-bearing lands including:

- state-wide standards for local mineral extraction regulations;
- uniform regulations or criteria for mining operations;
- identification of mineral deposits potentially available for extraction, where this has not already been accomplished (principally on Long Island);
- technical assistance to municipalities to encourage land use decision-making that will result in the extraction of minerals before the land is pre-empted for other uses;
- public education programs to enhance public understanding of both the economic and environmental aspects of mineral extraction, and stimulate the development of fair and reasonable mining policies at the local level.

In New York, state-wide standards and uniform regulations are being developed, and mining permits will be required for all operations after April 1, 1975.

Drawing by Jim Skerritt

Photo by Robert Perron

The Port Washington Sand Pits on Hempstead Harbor (photo left) should be reclaimed and developed as an important recreational area, with limited commercial development. It would be part of the Long Island Sound Heritage (drawing above)

2. **Reclamation of Port Washington sand pits.** As part of the Long Island Sound Heritage, the Port Washington sandpits on Hempstead Harbor should be purchased and reclaimed as a major new multi-use facility, with emphasis on recreation. For more detail, see Chapter 3, Improving Access to the Sound.

3. **Study marine mining feasibility.** The U.S. Geological Survey and the U.S. Army Corps of Engineers, in cooperation with Connecticut and New York, should conduct a study by 1978, to determine the quality, quantity, and location of sand and gravel deposits within the Sound, and assess the economic, environmental, and legal feasibility of marine mining to meet regional needs.

4. **Review of progress.** The New York and Connecticut Legislatures, through their committees on environmental protection and conservation, should monitor the progress and effects of the implementation of a minerals policy to insure that the objectives of meeting the region's mineral needs in environmentally and socially acceptable ways are achieved. If the orderly extraction of minerals does not occur as a result of these policies, then the Legislatures should establish a minerals extraction policy, to assure that lands containing valuable mineral deposits are not used for any other purpose until these deposits have been extracted.

5. **Rail distribution links.** The Departments of Transportation in New York and Connecticut should take steps to insure the preservation of rail transportation links and storage areas necessary for the distribution of minerals from present or future production sites.

6. **Restore abandoned sites.** The New York Office of Parks and Recreation and the Connecticut Department of Environmental Protection should initiate programs to reclaim selected abandoned mining sites which are especially suited for recreational use, using funds provided by appropriate federal, state, or local government sources.

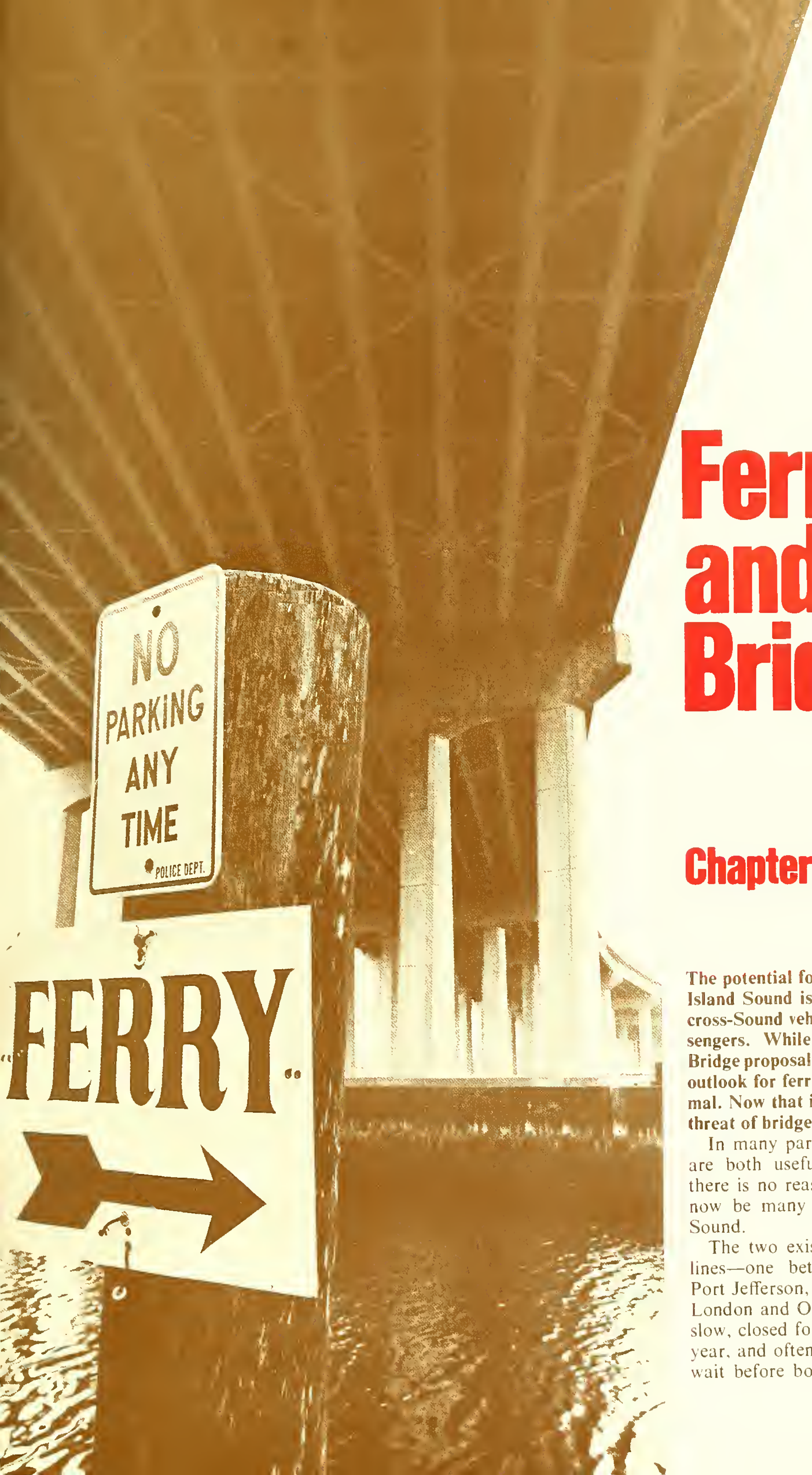


Photo by Ingbert Gruttner

Ferries and Bridges

Chapter Six

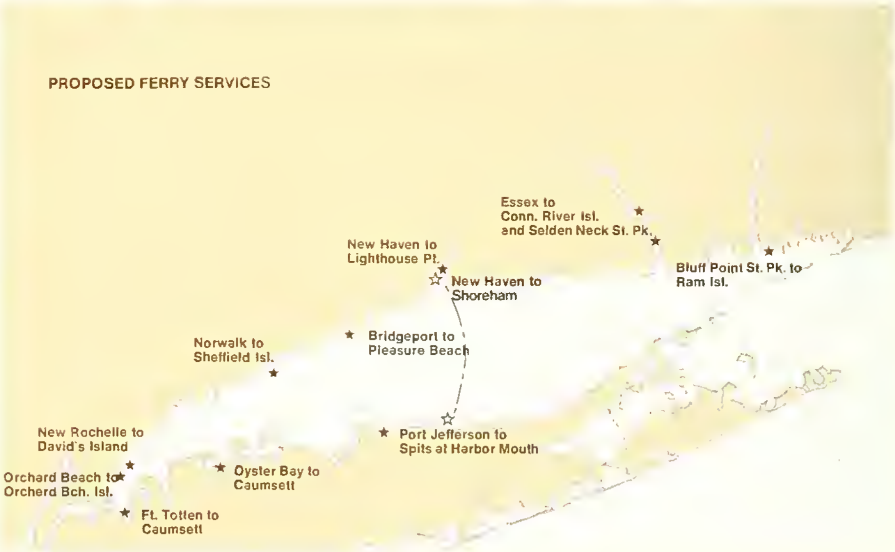
The potential for ferry service on Long Island Sound is considerable, both for cross-Sound vehicle traffic and for passengers. While the Rye-Oyster Bay Bridge proposal was alive, the economic outlook for ferry improvement was dismal. Now that it has been rejected, the threat of bridge competition is gone.

In many parts of the world, ferries are both useful and enjoyable, and there is no reason why there couldn't now be many more of them on the Sound.

The two existing commercial ferry lines—one between Bridgeport and Port Jefferson, the other between New London and Orient Point—are small, slow, closed for several months of the year, and often require a considerable wait before boarding. Unfortunately,

Photo by Ingbert Gruttner

Existing ferry service (above) across the Sound between Bridgeport and Port Jefferson and between New London and Orient Point is woefully inadequate. With the proposed Bridge between Oyster Bay and Rye (drawing opposite) now a dead issue, the opportunity exists for expanded service between the Shoreham-Wading River area of Long Island and New Haven, as well as for many more recreational ferry routes (map right)


PROPOSED FERRY SERVICES
Essex to Conn. River Isl. and Selden Neck St. Pk.
New Haven to Lighthouse Pt.
New Haven to Shoreham
Bluff Point St. Pk. to Ram Isl.
Norwalk to Sheffield Isl.
Bridgeport to Pleasure Beach
New Rochelle to David's Island
Port Jefferson to Spits at Harbor Mouth
Orchard Beach to Orcherd Bch. Isl.
Oyster Bay to Caumsett
Ft. Totten to Caumsett

the opportunities for expanding these existing services are limited, because of the traffic problems they would create at both ends of these ferry routes. However, a new mid-Sound crossing, with connections to the existing William Floyd Parkway Extension on Long Island and Interstate Routes 95 and 91 in New Haven, would save time for many people, would reduce some freight transportation costs, and would provide access both to New England for Long Islanders and to Atlantic Ocean beaches for New Englanders. It would help to preserve the rural atmos-

HIGHLIGHTS

To provide better ways to move people and goods across the Sound, the following actions are recommended:

1. Develop a New Haven to Shoreham ferry service
2. Provide recreational ferry/launch in 10 areas
3. Upgrade the region's rail freight system by
   - repairing the Poughkeepsie Bridge
   - improving service over the Hell Gate Bridge
   - studying a New York Harbor rail freight tunnel

phere of the North Fork. And with a crossing time of almost an hour, it would not be likely to generate commuter traffic or the kind of development which can occur at both ends of a bridge crossing.

RECOMMENDATION

1. **Commercial ferry service.** Both states should give serious consideration to a competitive bid procedure for the operation of a year-round ferry service from New Haven to Shoreham. The successful bidder would provide the stipulated service for either the highest net fee payment to the states or the lowest net subsidy from the states. The results of the study presently being conducted by the Tri-State Regional Planning Commission on this and other routes should provide the basis for the conditions of operation and estimated operating expenses.

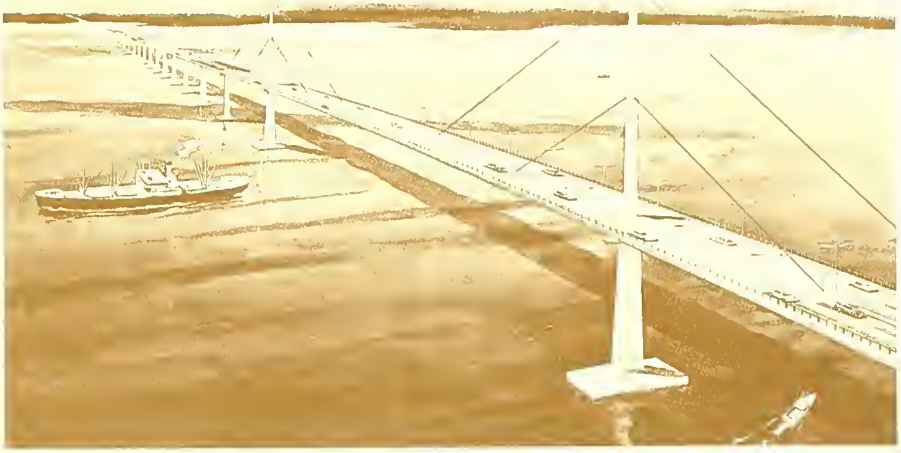
Passenger ferries could play a major role in expanding recreational opportunities on the Sound and increasing public access to Sound beaches.

A municipal ferry service between downtown Greenwich and a town beach on Little Captain Island has run successfully for more than fifty years. Serving Greenwich residents and their guests, it can carry more than 1000 passengers an hour using two boats, and costs less than $100,000 a year to operate.

More of these small, passenger-only lines could be established, both within redeveloped harbors and between public beaches, islands, and points of population concentration served by mass transit. Costs compare favorably with the alternative expenses associated with providing automobile access and parking, and the environmental impacts are much less. These ferries would form an integral component in the development of the Long Island Sound Heritage, particularly the islands proposed for recreational use.

RECOMMENDATION

1. **Recreational ferry service.** Both states, with appropriate federal aid, should either develop or franchise the development of small, passenger-only ferries or launches to provide relatively efficient, non-destructive access to beaches, and to enhance the recreational experience. They would at the same time provide a non-discriminatory means of *limiting* public access. This ferry service should include:



Drawing courtesy *On the Sound* Magazine

- Bluff Point Park to Ram Island;
- Essex to River Islands and Seldon Neck;
- New Haven to Lighthouse Point Park;
- Bridgeport to Pleasure Beach;
- Norwalk to Sheffield Island;
- New Rochelle to David's Island;
- Orchard Beach to Orchard Beach Island;
- Fort Totten to Caumsett State Park;
- Oyster Bay to Caumsett State Park;
- Port Jefferson to spits at the harbor mouth.

Freight Shipments

One of the economic arguments for the Rye-Oyster Bay Bridge was that it would improve truck freight service between Long Island and the mainland. Although the proposed ferry service would not provide a complete answer to this economic problem there are other solutions which should be carefully studied by the Tri-State Regional Planning Commission.

Much of the freight which now travels in trucks could also be handled by railroads. But railroad freight service on Long Island and along the Westchester County and Connecticut shoreline is virtually crippled by the absence of a good freight rail link through New York City and across the Hudson River. Present rail freight shipments detour as far north as Albany, thus putting rail freight service at a serious competitive disadvantage with trucks. Repair of the bridge and eventual renewal of freight service at the Poughkeepsie crossing of the Hudson would provide an interim solution while the feasibility of a New York Harbor tunnel was investigated. The benefits to society of transferring significant amounts of freight from highway to rail are so far-reaching that the whole question deserves far more serious study than it has received.

RECOMMENDATION

Rail freight service. The recommendations for port consolidation and a new cross-Sound ferry, if implemented, would improve the movement of goods to Long Island Sound ports and expedite the movement of people and cars across the Sound. To improve goods movement from Long Island to the mainland, and to relieve some of the truck travel along the Connecticut shore, the study has concluded that railroads represent a significant regional opportunity. As part of the current examination of northeast rail service, the study recommends:

- Reexamination of a New York Harbor rail freight tunnel crossing;
- Implementation of the Tri-State Regional Planning Commission recommendation to repair the Poughkeepsie bridge and renew freight service over it;
- Improvement of rail freight service over the Hell Gate Bridge between the Bronx and Queens.

Photo courtesy *On the Sound* Magazine

Holding back the fury of a storm-whipped Sound has proven to be difficult A better solution would be to keep out of nature's way by not building in flood-prone areas in the first place

Living with the Forces of Nature

Chapter Seven

Floods, storms, and erosion can take an enormous toll in lives and property. The region hasn't had a major flood or hurricane in twenty years, and our memories have faded. But the fact is we've built on a lot of land that belongs to the sea. And some day, inexorably, the sea will take some of it back.

Every year, the area around the Sound suffers millions of dollars of destruction in land lost, roads and structures damaged, navigation channels filled in, and soil washed down streams. Wind and rainfall make this a continuous natural process. Hurricanes about every ten years, and major flood disasters every twenty-five, accelerate it drastically.

Much of this loss is unavoidable or too costly to prevent. The largest flood control structures won't hold back a record flood driven by hurricane force winds. The process of constant erosion defies any scheme to stop it completely.

Flooding is a major problem along stretches of the Connecticut shore. Not only does the mainland receive the full force of hurricane winds, but in funnel-shaped harbors, where most of the coastal cities are built, storm surges are magnified, compounding the damaging effects. Coastal erosion on Long Island and upland erosion in Connecticut are also major problems.

Construction in flood plains or along

The National Flood Insurance Program encourages shoreline towns to regulate building development in the flood plains Restricting development in these floodprone areas will reduce flood damages and provide increased public access to the Sound and its shore. All towns in the study area should comply with the provisions of this federal program Heavily developed areas will have to be protected as much as possible, if it is economically infeasible to relocate the existing development

Photo courtesy U S Army Corps of Engineers

fragile bluffs and beaches invites future damages. Yet we often ignore the risks and "take our chances," because the most vulnerable locations are usually the most desirable as well.

Many structures have been built to help stem these losses. Many proposed projects have been abandoned because of environmental concerns or for lack of funds. As a society, our zeal for doing something about the problem peaks quickly right after a major disaster, and then fades away, a victim of our short memories, until the next disaster hits.

The long-term solution is to avoid building in flood and erosion prone locations, and gradually eliminate existing development through a process of attrition, except in the most densely built-up areas. Difficult as this may be, the increasingly stringent National Flood Insurance Program is Encouraging a long-term move in this direction. The advantages are two-fold. Suffering and damage are reduced. At the same time, the unique shoreline is returned to a more natural state, and more people can have access to it.

Flooding

The recommended plan will cut aggregate flood losses over the next fifty years by one billion dollars. Nine small watershed projects are included at a cost of $25 million, with the federal share 50 to 70 percent of each. Seven tidal flood prone areas are also recommended for further study of alternative solutions. In spite of the plan, about 20 percent of the damages in 2020, and 50 percent in 1990, are beyond control in environmentally, economically, and socially acceptable ways.

Some of the total loss, but by no means all of it, could be cut by structural measures recommended for study in highly developed coastal areas. However, local communities which would benefit from structural measures have repeatedly rejected them on the grounds of cost and perceived adverse environmental effects. Therefore, it is unlikely that these measures will again be considered seriously until after the next major flood. There are also sure to be problems relocating established development out of downtown and other flood prone areas of coastal municipalities. The effectiveness of existing means of discouraging new development also poses serious challenges.

Put another way, even with the diligent application of the study's recommended land use measures, as well as upstream riverine structures, the region still faces the certainty of serious tidal flood losses sometime in the foreseeable future.

RECOMMENDATIONS

1. **Flood plain management.** All towns with areas formally designated by the U.S. Department of Housing and Urban Development as flood hazards, should adopt required regulations to qualify for the National Flood Insurance Program by 1975, or twelve months from their date of notification, whichever is later. Connecticut and

HIGHLIGHTS

To protect existing- -and limit new- -development in areas subject to extreme natural forces, the following actions are recommended - -

HIGH PRIORITY

1. Adopt flood plain management regulations
2. Conduct detailed tidal flood protection studies at seven locations
3. Restrict development in rapidly eroding areas
4. Develop nine riverine flood protection projects
5. Conduct two pilot flood plain management studies

MEDIUM PRIORITY

6. Redevelop selected flood-prone areas
7. Improve forecast and warning services
8. Conduct pilot tidal erosion protection project
9. Develop regulations to control urban erosion
10. Control roadbank erosion
11. Dredge channels

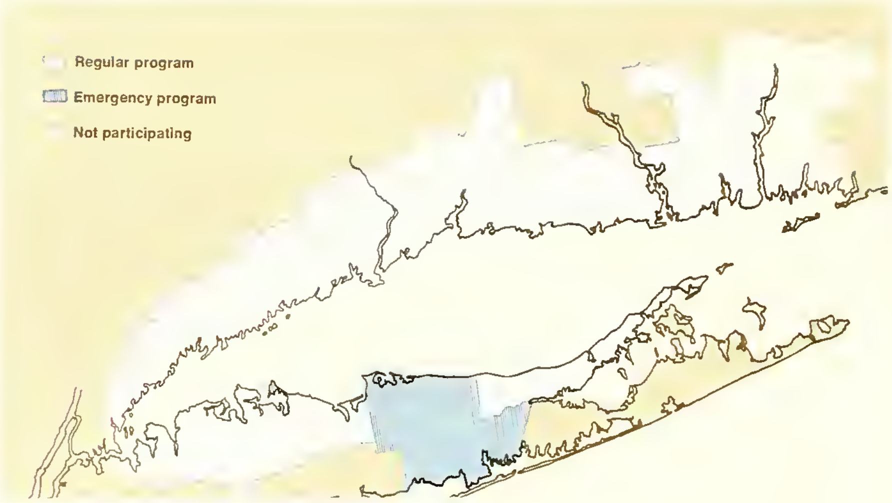
OTHER RECOMMENDATIONS

12. Hurricane modification research
13. Maintenance of selected erosion control structures
14. Reduction of agricultural and forest soil losses.

New York should continue working with the municipalities to see that they qualify for the program, and that property owners are made fully aware of and encouraged to purchase the flood insurance. Recently passed New York legislation will require the state to establish necessary regulations to qualify for the insurance, if the municipality does not meet the requirements within specified time limitations. Connecticut should do likewise.

Mechanisms should be developed to assure public use of flood plains returned to an open state as a result of this program and, in addition, the study-proposed coastal zone management entities in both states should develop guidelines to discourage rebuilding in selected flood plains following a major disaster. The flood plain management program will provide the impetus for the following damage reduction measures:

- *Regulation of land use.* Stricter flood plain zoning, building codes, and other development controls should account for about 10 percent of the damage reduction;
- *Voluntary flood proofing.* To reduce expected flood losses by about 5 percent, Connecticut should implement by 1975, a program to educate its flood plain occupants on available flood proofing techniques, such as sewer adjustments, permanent closures, protected openings, and the location of major utilities and valuables above the ground floor;
- *Mandatory flood proofing.* To reduce expected flood losses by about 5 percent, Connecticut should encourage and assist its municipal governments in flood prone areas to study and adopt flood-conscious building and housing codes by 1975, which might include requirements for proper anchorages of buildings, for minimum basement and ground floor elevations, and for use of specific types of building materials;
- *Public education.* This is a key component of the process of developing local flood plain ordinances, and should reduce losses by about 2 percent;
- *Pilot flood plain management studies.* The U.S. Army Corps of Engineers, with state and New England River Basins Commission assistance, should conduct detailed tidal flood plain management studies by 1980, for one community each in Connecticut and New York, to develop alternative plans for flood damage reduction, using different combinations of structural and non-structural techniques for each. The studies should serve as models for design and adoption of programs and policies for flood plain management throughout the coastal area of each state. In addition, the studies should develop specific guidelines for the development of similar plans in other coastal communities in each state.



Status of towns in the Flood Insurance Program

2. **Provide flood control structures.** To reduce expected flood losses by about 10 percent, the Soil Conservation Service should develop locally sponsored riverine flood control projects on the Yantic River, Harbor Brook, West River in New Haven, Neck River, Munger Brook, Farm River in North Branford, Farm Brook, Norwalk River, and Blind Brook. An integral part of each project must be a land use management program, with appropriate local cooperation, to prevent overextension of development in the protected area.
3. **Study tidal flooding areas.** The Corps of Engineers, with appropriate state and local support, should study alternative solutions to flood threats at Thamesville, Montville, New London, Point of Woods, Stratford, Fairfield (Pine Creek), and Westport (Compo Beach), and prepare detailed recommendations by 1985. Structural solutions, inland as well as coastal, would cost an estimated $27.6 million and reduce damages by about 20 percent.
4. **Modify hurricanes.** To reduce expected flood losses by about fifteen percent, the National Oceanic and Atmospheric Administration should intensify its current research efforts to achieve an environmentally and socially acceptable capability, by 2000 or earlier, to modify hurricanes threatening the region, or to divert them out to sea.
5. **Redevelop selected flood prone areas for public recreation and other uses.** Connecticut and New York should set aside funds to acquire, or assist municipalities to acquire, needed public access to the water and recreation areas. This should reduce flood losses by about 10 per cent.
6. **Improve forecasting, warning, and evacuation services.** The National Weather Service should improve its capability to forecast hurricane paths and intensities, and warn the public, to reduce approximately 3 percent of the losses, a figure which may be considerably higher in cases of riverine flooding.

Erosion and Sedimentation

The recommended plan is expected to reduce average annual coastal erosion and sedimentation losses from about $14 million to $9 million in 1990, and from about $27 million to $17 million in 2020, an aggregate savings of about $360 million over the next fifty years. However, 85 percent of the erosion damages are accepted as beyond solution. Estimated cost is $26 million, of which the federal government would pay $16 million for the cost of dredging.

For upland erosion and sedimentation, the recommended plan is expected to reduce average annual losses from $11 million to $5 million in 1990, and from $12 million to $5 million in 2020, an aggregate savings of about $360 million over the next fifty years. Estimated cost is $29 million, of which the federal government would pay 25 percent.

Photo courtesy *Long Island Press*

Photo courtesy U.S. Army Corps of Engineers

Fragile dunes and other erodable areas (top) of the shoreline should not be built on. Nor should the banks of rivers and streams which (above) are flood prone.

RECOMMENDATIONS

1. **Accept most coastal erosion damages.** Recognize that about 85 percent of coastal erosion damage is beyond practical remedy in environmentally, economically, and socially acceptable ways.

2. **Reduce urban and coastal losses with non-structural measures.** To reduce upland erosion and sedimentation losses by about 35 percent and coastal losses by about 2 percent, and protect water quality and aquatic life, Connecticut and New York, in conjunction with local governments, should establish standards by 1980, for non-structural erosion control, including land use regulations and possible restrictions on development, based on an identification of soil types, construction regulations for developers, and the retention of natural vegetative cover. In the event of non-compliance, the state would establish the regulations.

3. **Dredge channels.** To reduce coastal erosion and sedimentation losses by about 25 percent, the U.S. Army Corps of Engineers, with the approval of the affected state and in coordination with the proposed petroleum receiving and distribution authorities, should continue to dredge channels as needed for safe navigation.

4. **Control agricultural and forest losses with non-structural measures.** To reduce upland erosion and sedimentation losses by about 15 percent, the USDA Soil Conservation Service and Forest Service should intensify their current programs through Soil and Water Conservation Districts, with the aim of having cooperative conservation plans developed for 60 percent of the agricultural and forest area in the region by 1990. These might include the use of sound farming practices, such as contour farming, strip cropping, and soil conservation tillage methods, and the maintenance of forested buffer strips along streams.

5. **Control agricultural losses with structural measures.** To reduce upland erosion and sedimentation losses by about 5 percent, the Soil Conservation Service should continue its current program through Soil and Water Conservation Districts, with the aim of having structural measures such as diversions to redirect surface run-off, terraces to reduce the length of slopes, and grassed waterways to provide outlets for accumulated or diverted water, applied in at least 70 percent of the justified agricultural locations by the year 2000.

6. **Control roadbank erosion.** To reduce upland erosion and sedimentation losses by about 5 percent, the Connecticut and New York Departments of Transportation, with the assistance of the Soil Conservation Service, should establish guidelines for roadbank erosion control on new and existing highways, including: the construction of storm drains, chutes, and catch basins; the use of soil mechanic principles for the design of stable embankments; and inspection and maintenance programs. The aim should be to correct at least 70 percent of the significant problem areas by 1990.

7. **Maintain existing structures.** To reduce coastal erosion and sedimentation losses by about 10 percent, Connecticut and New York should continue to inspect and maintain existing state and federally built beach erosion control structures annually.

8. **Demonstration project.** Both states and the U.S. Army Corps of Engineers should encourage ongoing research into wave energy dissipation systems. Consideration should be given to developing a small demonstration project along a section of Suffolk County's north shore, with funding provided under the provisions of the Shoreline Erosion Control Demonstration Act of 1974.

Photo by Ingbert Gruttner

Industrial urban waterfronts can be a blight on the Sound. Industries that don't need to be there should be encouraged to relocate, so that these unique waterfront areas can be redeveloped for more "people oriented" activities.

Chapter Eight

The View of the Shore

HIGHLIGHTS

To revitalize deteriorated harborfronts and preserve historic and natural areas of beauty, the following actions are recommended:

HIGH PRIORITY

1. Redevelop urban waterfronts by
   - increasing public access
   - developing public marina and boat rentals
   - relocating non-water dependant land uses
   - designating areas for new private development
   - improving public transportation to the shore.
2. Clean up harbor debris in five harbors
3. Protect entire districts of historic quality
4. Adopt the Study's *Design Handbook*

MEDIUM PRIORITY

5. Improve visual access
6. Register critical scenic areas
7. Create scenic preservation funds
8. Develop "Classrooms by the Sound"

OTHER RECOMMENDATIONS

9. Roadside scenic overlooks
10. Tax incentives for scenic preservation
11. Statewide design standards

Some parts of the shoreline—particularly the rundown, industrialized waterfronts—hold enormous potential for water-related development. Other parts have great beauty and historic significance which need to be preserved for all of the region's people.

A Major Facelift for the Sound's Harbors

The history of the port cities around Long Island Sound goes back 300 years and more. It is a record of prosperity and decline which has ebbed and flowed over time, influenced by changing technology, custom, and culture, and dominated by the dynamic and colossal Port of New York.

When the Sound was the area's chief avenue of transportation, the waterfronts of these cities flourished. But times change. Today, with a different mix of commercial shipping activities, many of these ports are left with decaying, underutilized waterfronts. Many industries that depended so heavily on the Sound have departed, leaving a legacy of old industrial buildings and wharf development, abandoned or occupied by small firms who are there only because the rent is low.

Today, petroleum products and sand and gravel constitute about 90 percent of all the cargo moving in and out of Sound ports. Shipments of other goods, although increasing slowly, are

Drawing courtesy New Haven City Plan Department

Imaginative proposals such as this plan for water-related activities at the Long Wharf area of the New Haven waterfront (above) should be developed in other urban settings around the Sound. Unfortunately, this one has yet to be built. Abandoned barges (right) and rotting piers should be removed, since they are both hazards to navigation and visual blights. The shoreline should be reclaimed to provide the region's people with pleasant vistas and interesting experiences.

Photo by Ingbert Gruttner

not likely to experience a strong growth trend, due to the nature of the region's economy and the dominating influence of the Port of New York, which has undergone massive modernization to accommodate to the new age of containerization. Petroleum shipments will continue to the Sound's major ports although, with present pipeline technology, there is little reason to continue storing these materials on urban waterfronts.

As the water quality of their harbors gradually improves, the cities on the Sound could boost their economies, attract desirable new businesses, and provide their residents with rewarding, Sound-oriented experiences, by rehabilitating their rundown waterfronts for water-related recreational, commercial, and residential activities.

RECOMMENDATIONS

1. **Waterfront redevelopment.** Cities should employ all available authority and appropriate state and federal funding, such as Community Development Act funds or coastal zone management act grants, to redevelop waterfront properties which are in substandard condition or are significantly incompatible with state coastal zone plans. All levels of government should share in the expense of such programs. Each locality's revitalization effort should try to include appropriate recommendations from throughout this plan, such as:

- increased public access;
- public transportation to waterfront renewal areas;
- marina and small boat rental facilities;
- passenger ferry service to nearby recreation sites;
- public beaches;
- improved shorefront street design;
- design standards for urban waterfront renewal;
- incentives for non-water dependent industry to relocate inland;
- designated areas for water-dependent industrial and commercial development;
- relocation inland of oil storage tanks.

2. **Harbor debris cleanup.** The U.S. Army Corps of Engineers should immediately begin a program of harbor debris cleanup, including removal of dilapidated or rotting piers and abandoned, grounded vessels. The priority harbors are Hempstead, New Haven, Bridgeport, Norwalk, and Stamford. The program should be completed by 1985.

3. **Establish environmental education programs.** New York and Connecticut should develop a "Classroom by the

Sound" marine-oriented program of environmental education, with strong ties to local schools. Facilities should either be located close to urban centers or should be accessible by public transportation from these downtown areas.

Protecting and Enhancing Historic Towns and Shoreline Landscapes

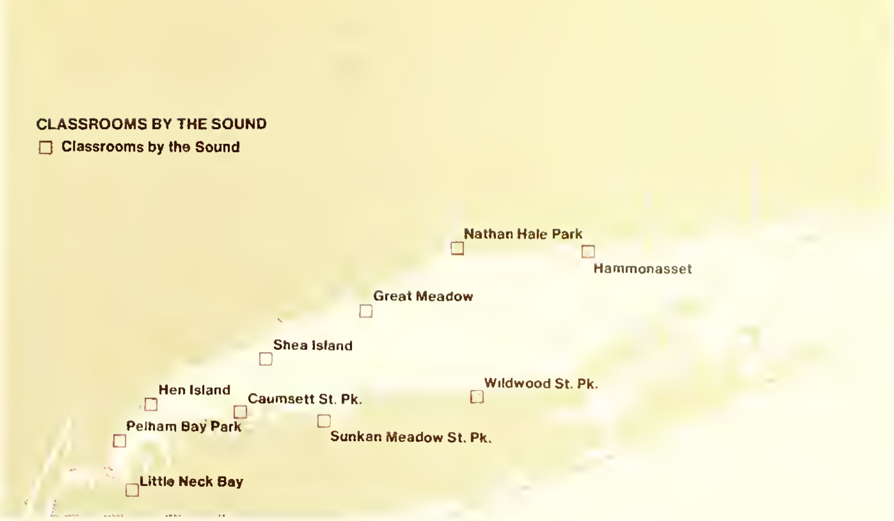
While there is a need to rehabilitate and renew the run-down portions of the Sound's shoreline, there is a concurrent need to both protect remaining areas of particular scenic or historic value and to increase the public's awareness and understanding of the Sound.

Classrooms by the Sound should be developed in many locations (see map top of opposite page) to provide environmental and marine-oriented educational experiences for students of all ages. A model for these already exists in Groton called Project Oceanology (above)

Photos by Dr Howard Weiss

RECOMMENDATIONS

1. **Improve visual access.** The study-proposed state coastal zone management entities, described in Chapter 9, Carrying Out the Plan, should develop a public access element for maximum visual and physical enjoyment of the shoreline and coastal waters by the general public. State Departments of Transportation should identify possible scenic overlooks along state and federal highways.
2. **Register of critical scenic areas.** The study-proposed state coastal zone management entities should establish a list of critical natural, scenic, and historic areas within the Long Island Sound region, and a priority system to guide protection and acquisition programs.
3. **Protect scenic townscapes.** Connecticut and New York Legislatures should modify existing legislation protecting historic districts to encompass entire scenic townscapes. Amendments should authorize the Commissioners of Environmental Protection in Connecticut and Environmental Conservation in New York to designate developed areas of statewide or regional scenic and cultural importance, and establish such architectural and design controls and standards as are necessary to protect the integrity of these scenic districts. Among the townscapes included should be Essex village center, Stonington Borough, Guilford center, Southport Harbor, and Mystic center in Connecticut, and Sea Cliff, Roslyn, Head of the Harbor, Cold Spring harbor, Northport, and Greenport in New York.
4. **Scenic preservation funds.** New



Scenic vistas should be preserved and views of the Sound opened up so that the water can be a "presence" in the lives of the region's inhabitants (below). Historical areas should also be protected, both for their scenic values and as monuments to our cultural heritage (bottom).

Drawing by Jim Skerritt

Photo courtesy *On the Sound* Magazine

York and Connecticut should establish special land acquisition funds for scenic and open space acquisition. Funds would be provided through the 1972 Environmental Bond Act in New York, a new open space acquisition and development bond act in Connecticut, and the Federal Land and Water Conservation Fund. Local efforts should utilize tax incentives to encourage scenic preservation. Special state attention for scenic preservation should be given to five corridors: 1) Connecticut shore and upper shorelands east of New London to the Rhode Island border; 2) the "Green Triangle" between Branford, Old Saybrook, and Middletown, particularly the ridges, valleys, and town centers; 3) The Norwalk Archipelago from Cockenoe to Sheffield Islands; 4) portions of the Eaton's Neck-Lloyd's Neck area; 5) the Nissequogue-Crane Neck area; 6) the Long Island North Fork east of Wading River.

5. **Design standards for developments of statewide concern.** The study-proposed state coastal zone management entities, in cooperation with other appropriate state agencies, should adopt mandatory site selection, site planning, and design criteria for all developments of statewide concern in or affecting the coastal zone. All such state standards for *nuclear power plant siting and design* must be compatible with standards established by the federal Nuclear Regulatory Commission and requirements of other federal agencies. The boards should also encourage coastal municipalities to adopt site selection, site planning, and design criteria for significant developments proposed for locations within the viewing radius from the shoreline. These design criteria should be adapted from the study's separate publication, *Shoreline Appearance and Design: A Planning Handbook*

How to use the Study's Planning Handbook to improve shoreline appearance and design around the Sound

The Study has developed a handbook to help planners, officials, and citizens protect and enhance the scenic values of Long Island Sound environment and increase opportunities for people to have pleasurable and leisurely physical contact with the Sound and its shores. Through a shoreline evaluation and planning process, actions which affect the aesthetic resources of the coastal zone can be evaluated and priorites for specific "shorescape" uses established.

The Handbook can be used in several ways:

1. TO ANALYZE THE EXISTING SHORELINE AT ANY POINT

A *shorescape analysis grid* **(Figure 1)** shows topography and development patterns for 200 shorescape units around the Sound and evaluates them in terms of nineteen visual criteria. Used with a set of keyed maps provided **(Figure 2)**, a composite picture of each shorescape unit emerges.

2. TO PROVIDE OVERALL GUIDELINES AND CONSTRAINTS FOR DIFFERENT SHORELINE LAND FORMS

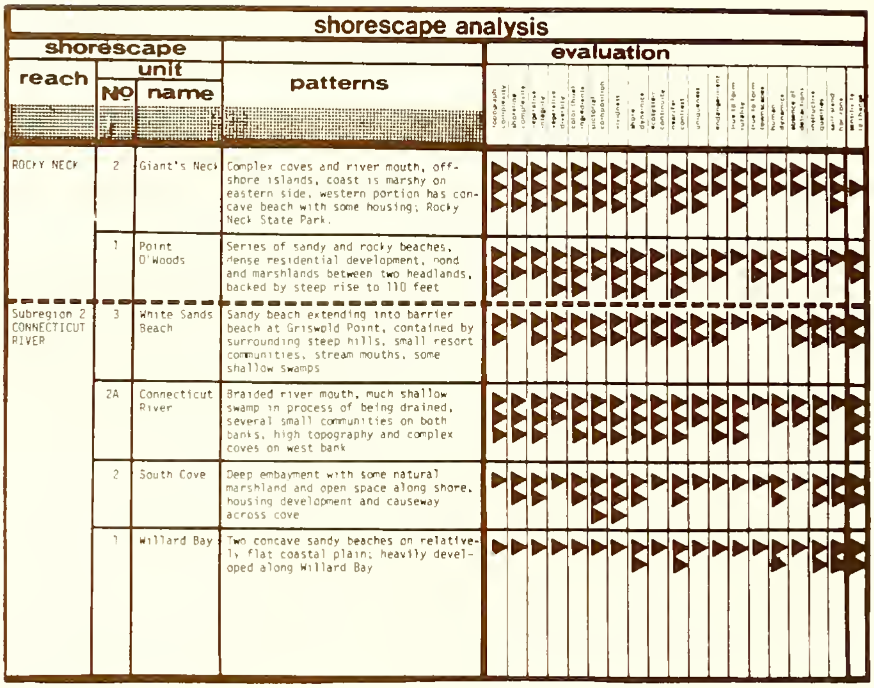
Twelve different shorescape types are discussed, with specific examples of each, and general guidelines and constraints for each type of shoreline terrain are set forth.

3. TO GUIDE LOCAL AND REGIONAL COASTAL DECISIONS

A shorescape Management Grid **(Figure 3)** provides recommendations for each specific shoreline unit and guides planners and other officials in the location of new development, the protection of areas of special scenic concern, and in other resources planning.

4. TO GUIDE SITE PLANNING AND DESIGN FOR NEW, LARGE-SCALE FACILITIES ON THE SHORE

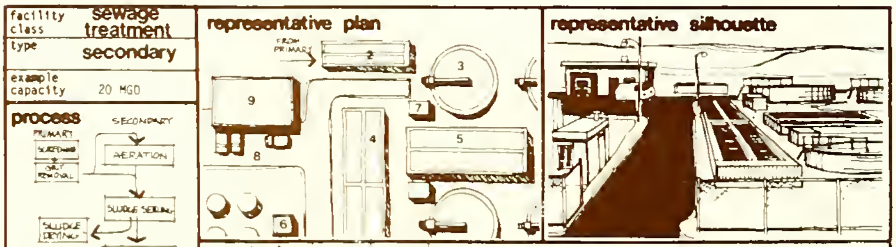
Components of such large-scale facilities as sewage treatment and electric power generating plants, tall structures, marinas, and other facilities are reviewed **(Figure 4)** and specific guidelines and constraints for their development are recommended, once the necessity of locating the large-scale facility on the shoreline has been determined.



shorescape analysis

shorescape reach	unit Nº	unit name	patterns	evaluation
ROCKY NECK	2	Giant's Neck	Complex coves and river mouth, offshore islands, coast is marshy on eastern side, western portion has concave beach with some housing; Rocky Neck State Park.	
	1	Point O'Woods	Series of sandy and rocky beaches, dense residential development, pond and marshlands between two headlands, backed by steep rise to 110 feet	
Subregion 2 CONNECTICUT RIVER	3	White Sands Beach	Sandy beach extending into barrier beach at Griswold Point, contained by surrounding steep hills, small resort communities, stream mouths, some shallow swamps	
	2A	Connecticut River	Braided river mouth, much shallow swamp in process of being drained, several small communities on both banks, high topography and complex coves on west bank	
	2	South Cove	Deep embayment with some natural marshland and open space along shore, housing development and causeway across cove	
	1	Willard Bay	Two concave sandy beaches on relatively flat coastal plain; heavily developed along Willard Bay	

Figure 1



facility class: sewage treatment
type: secondary
example capacity: 20 MGD

central components		critical dimensions horizon.	critical dimensions vertical	prominent structures	typical material	remarks
	PRIMARY TREATMENT					Settling tanks and sludge drying beds are similar in size to secondary treatment facilities.
2	AERATION TANKS	75'	+3'	side railings	conc	Area dimensions determined by BOD criteria, designed for quality, not quantity of effluent.
3	SECONDARY SETTLING TANKS	100'	+7'	mainten. walkways	conc	May be round, rectangular, or square Round preferred for greater control.
4	SLUDGE DRYING BEDS	100'	+2'	-	conc	Great flexibility in shape, area requirement = 1.5 square feet per capita
5	SLUDGE DIGESTERS	20'	+10'	-	conc	Digesters may be used separately or in combination with sludge drying beds. Aerobic tanks also used, height +5 feet
6	CHLORINATION BUILDING	10'	10'	-	conc, brick	Usually located near discharge point, may be housed in separate building because of nature of chlorine
ancillary components						
7	PUMP HOUSE	10-15'	10'	-	conc, brick	Must have head room; location can vary (larger pump capacities may be required)
8	PARKING & SERVICE AREA	-	-	fencing	conc	Fencing may be of any materials or combinations that meet security requirements
9	CONTROL/MAINTENANCE BLDG	50'	15'	mass	conc, brick	No constraints on building materials or architectural style, building may reflect architecture of area

notes
1 Area requirements 100-140 acres for 20 MGD plant [11]
2 As plant capacity increases, additional units are added, existing ones not expanded
3 EPA requires duplicates of all components to assure proper functioning of plant during maintenance and breakdown

Figure 4

5. TOOLS TO MANAGE THE SHORESCAPES OF THE SOUND

Existing laws, institutions, and regulations governing shoreline appearance are reviewed, and new and innovative tools which have been adopted by some state, regional, and local jurisdictions are identified.

In addition, the Planning Handbook provides a primer for the understanding of basic appearance and design principles which should always govern activity along the shore of the Sound.

shorescape management					
areas of special scenic concern					
units included	atlas Nº	name	assets	deficits	management recommendations
Giant's Neck Point O'Woods	7	Rocky Neck State Park	Rocky Neck State Park	Negligible	Preserve the open shoreline along Rocky Neck State Park and Black Point Preserve the woodland and green space at Rocky Neck State Park Constrain building on the indented shores along the Pataquanset River
White Sands Beach Connecticut River South Cove Willard Bay	8	Mouth of Connecticut River	North and South Coves in Saybrook	Negligible	Preserve open shoreline at Great Island and along Rock Creek Preserve woodland and green spaces in Old Lyme on Johnnycake Hill and Great Island Increase public access and views along Guardhouse Point and Willard Bay and to Old Lyme and Saybrook Point Manage the townscapes and historic assets of Old Lyme and Old Saybrook Enhance the harborsides in North and South Coves Limit or relocate industrial uses from the shores Set back development in Old Lyme and Knollwood

Figure 3

key

preserve open shoreline
preserve woodland/farm/green space
increase view/public access/shores, islands
constrain building on sensitive heights/indented shores
open up dense built-over shores
manage townscape historic assets
enhance harborsides
limit relocate industrial uses from shore
set back development ameliorate bluffs
rehabilitate urban landscape

*	outstanding scenic asset
○○○	deficit, intrusion/eyesore
17	text (atlas) reference

Figure 2

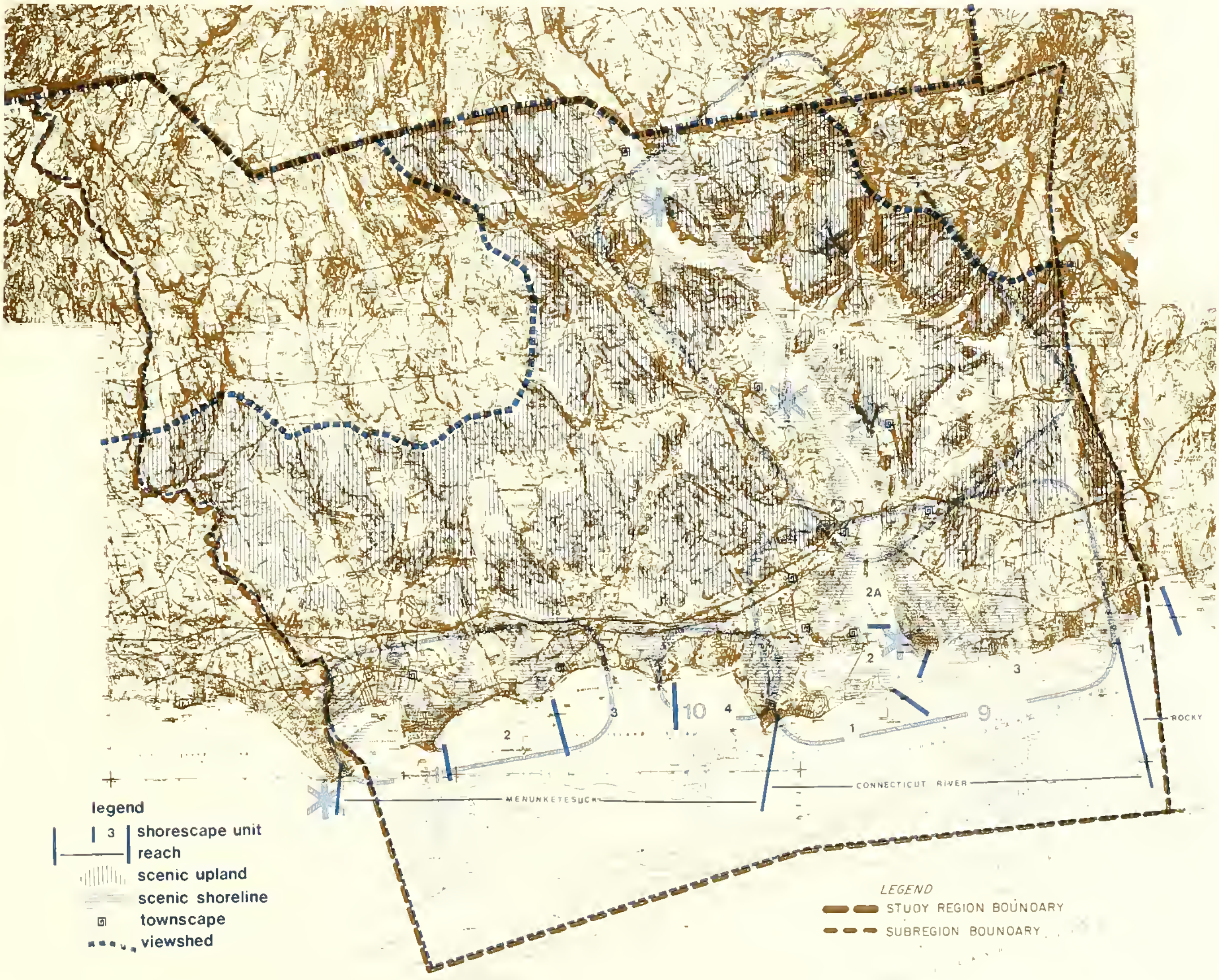


Photo by Robert Perron

Who Should Do What to Save the Sound

Whatever management system is ultimately adopted for Long Island Sound and the land around it, many different government agencies and individuals will continue to play important roles, if the recommendations of the Study are to be implemented.

The solutions to sewage pollution problems, for example, require large appropriations by Congress, which are, in turn, administered by the federal *Environmental Protection Agency*. *State legislatures* must also appropriate their share of these costs, and state agencies must be involved in the administration of these funds. Local governments are ultimately responsible for using the state and federal funds in actual construction projects. They must also appropriate their own money to operate and maintain facilities.

The plan proposes to consolidate pertroleum receiving and distribution facilities in five Long Island Sound ports in order to make the system more efficient, reduce the likelihood of damaging oil spills, and eliminate the need for most harbor dredging. This will require *state legislative* action to set up two *Petroleum Receiving and Distribution Authorities*, which would develop offshore unloading terminals, in cooperation with the *U. S. Army Corps of Engineers*, build new pipelines, acquire land to develop inland storage tank areas and, with the *U. S. Coast Guard*, set limits for the size of tankers that would be allowed to come into the Sound. In addition, *Congress* is asked to enact legislation requiring the licensing of crew members on boats used for hauling and pushing barges, and to appropriate funds to enforce both this and existing laws. The *Coast Guard* should establish sea lanes into the five ports, and expand their inspection and enforcement operations. Legislation requiring the use of spill containment equipment is a *state* matter, while *private* companies engaged in petroleum operations on the Sound must purchase the equipment and conform to its legislatively prescribed use.

Like these two recommendations of the Study, many others will require active participation by different groups of people. A Guide for Decision Makers in Section Five of the Supplement presents detailed information on who should do what to implement all of the major Study recommendations.

Carrying Out the Plan

Chapter Nine

Many of the tools we need to manage the Sound already exist. If the shoreline communities will join in coastal management programs with Connecticut and New York, this plan can be put into action, and the shoreline can be saved for everyone.

Previous sections outline findings and recommendations which constitute the elements of a comprehensive management program for Long Island Sound. In most cases, existing government agencies or private interests are asked to implement the recommendations. For most recommendations, the management tools which these agencies need already exist. For others, new legislation and additional funding will be required. There remains the important question of how the public can be sure that the plan's many recommendations will be carried out. Earlier sections document two key findings:

- management of the shoreline is the key to effective management of the Sound itself. Despite the ongoing programs directed toward it, the Sound faces continued threats, deterioration, and lowered usefulness;
- many shoreline decisions transcend local jurisdictions, but because the basic regulatory authority at the water's edge is held by local governments, no way exists for them to act jointly, in the interests of all.

A management program must be devised which will provide local interests with the tools they need to guide growth and regulate use of the shoreline, in the largest public interest. A framework for action came into existence during the course of the study: the Coastal Zone Management Act of 1972. This act sets forth, as national policy, the encouragement of state action to exercise their full authority over the land and waters of the coastal zone, so as to assure more effective protection and use of coastal resources. The federal government provides money to a coastal state to identify their coastal zones and define permissible uses and areas of particular concern. It also requires the states to set priorities, to exert control over these critical areas, and to establish an organization which will carry out a management program, including the establishment of liaison with local, areawide, state, regional, and interstate agencies. The program must be developed in concert with federal, regional, and sub-state agencies, and with full public participation. It must consider the national interest in the siting of key facilities, and it must identify preservation, conservation, recreation, ecological, and esthetic areas. Once the program is approved, federal agencies must conform to it.

The act provides a timely impetus, as well as the financial means, for the people of the region to make the Long Island Sound Plan a reality.

Both New York and Connecticut have been awarded coastal zone grants and planning activities are underway. Both states, in cooperation with their localities, can develop management programs in accord with the act which will also be suitable vehicles for implementing the recommendations of the plan. Some suggested directions follow.

Interim program

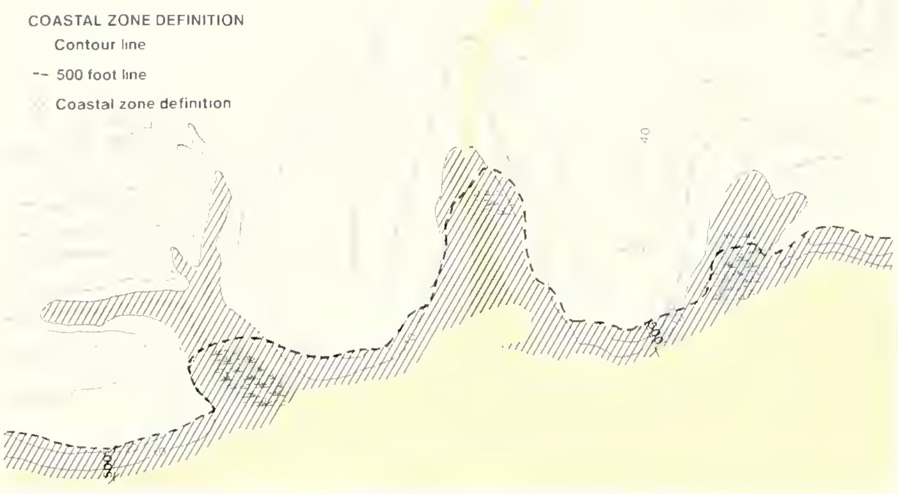
There are existing programs to keep many of the study's recommended activities moving forward. But actions to implement a *balanced management program* need to be started immediately, so that the momentum of the study is maintained. There needs to be an organization to speak for the Sound to provide a "living inventory" of Soundwide problems, and to keep up the pressure to implement the plan. Most important, there needs to be a way to provide a connective link between this study's plan and emerging state and local directions in coastal zone management.

An immediate short-range program, built on existing authorities, should be able to analyze problems and specify actions for others to take on behalf of the Sound. It ought to have strong policy direction and leadership by the states, because they carry much of the responsibility for Sound management and encompass all the various jurisdictions, except federal. It should recognize the major role of local and substate regional agencies and insure their representation. It should have full public participation and outside scientific and technical expertise should be available to it.

Options which were considered include continuation of a small Long Island Sound Study staff capability within the New England River Basins Commission; an interim program within some other regional agency; giving the study's existing Citizen Advisory Committee added responsibilities; and an interim coordinating program set up by the two states working together within their existing coastal zone planning efforts. This latter was selected.

RECOMMENDATION

1. Both states, together, should establish an interim Long Island Sound Action Program, as part of their individual coastal zone programs, composed of state, local, and regional agency representatives, and citizen representatives drawn from the Long Island Sound citizen advisory committee as well as other sources. Selected federal officials should also participate. Local representation is imperative and might be obtained by a special convocation of all affected local governments or by a congress of local governments con-



For the purposes of this Study, the Coastal Zone of the Sound was defined as the first 500 feet inland of the high water mark, or the land up to the 10-foot elevation, whichever emcompasses the greater land area, as this map shows. Within that zone, development should be strictly regulated to protect the Sound and its shoreline from further degradation.

vened by the Governors, in order to select representatives.

Funds could be allocated to this program from the states' coastal zone planning program grants to support a small staff—ideally, in a central location. This interim program should:

- link the Long Island Sound Study and state coastal zone programs, and continue as a forum to discuss Soundwide issues;
- review and evaluate major public or private project and development proposals having a significant effect on the Sound;
- focus attention on those recommendations of the Long Island Sound Plan which require immediate implementation;
- stimulate additional research and needed studies to fill gaps in knowledge;
- promote information and education about the Sound.

Long range program

An effective *long range* program should be built on the interim program, but must also provide for authority to deal conclusively with issues of significant impact on use of the coastal zone. Such a long range program would have to provide an effective means for towns to discourage unwise shoreline development, and to resolve issues with impacts beyond local boundaries. It would have to share its authority fairly among levels of government. Given the strong home rule tradition in both states, programs must be developed by local and state governments acting together.

It would establish coherent policies for issues of greater than local concern, so as to strengthen the ability of local governments to deal with issues that transcend their boundaries. At the same time, it should allow municipalities to retain local prerogatives which are not absolutely crucial to preservation and restoration of the coastal zone. It should avoid over-centralized decision making. It should insure the expression of statewide and federal interests, but not create a new level of government to overlap existing statewide programs or come between local and higher levels of government.

Options fell into the following categories, the last three of which were suggested by the Coastal Zone Management Act.

A Bi-State Compact was considered at length because of its apparent simplicity and authority. The Tri-State Regional Planning Commission, the Appalachian Regional Commission, the Atlantic States Marine Fisheries Compact, the Delaware River Basin Commission, and the Port Authority of New York and New Jersey are some examples of interstate organizations. Most compact agencies, however, were organized for a single purpose. Interstate agencies with comprehensive concerns and exclusively regulatory responsibilities in the United States have had limited acceptance.

The major argument for a bi-state compact is the degree of coordination it would provide between New York and Connecticut. However, important as bi-state coordination is for one body of water like the Sound, many of the recommendations of the study can be implemented by each state acting independently. Water quality improvement, coastal zone management, port consolidation, shoreline design, harborfront renewal, acquisition and management of shoreland — all of these can be accomplished by each state with a modest amount of cooperation. And for many of these programs, coordination is mandated by the federal government.

A bi-state agency for the Sound would have to wield powers which have not yet gained wide acceptance on the state level. It would be dependent on the State Legislatures for funding, and accountable to them, rather than the voters. It could not really be an independent level of government. For these reasons, and because it could take as long as eight years to set up, the compact approach is not recommended.

Direct state regulation is another option, and one taken by the state of Hawaii in its land use law. Such a system might designate the environmental agency in each of the two states as the lead agency to prepare a plan for a statutorily defined state coastal zone. A separate state agency would be responsible for administering a program to implement the state plan, by issuing all development permits for any use in the coastal zone, including public and private proposals. Outside the coastal zone, local governments would continue to be responsible for regulating land use, with the exception that certain specified types of development with an identifiable impact on the coastal zone would be referred to the state regulatory departments for review. The obvious drawback to such an approach in this region is that it doesn't accommodate the political traditions of home rule. It also places an enormous administrative burden on the state.

Local regulation in accord with state standards is the approach taken by

Connecticut's Inland Wetlands and Water Courses Act and New York's flood plain management program. Under state guidelines, local governments would adopt and implement plans and carry out management programs. Only if they fail to do so would the state step in and do the job for them. This approach tends to let each level of government do what it does best. But it would require significant new laws and might cause considerable administrative difficulties. And most important it might allow too much room for inconsistent decisions between municipalities.

A balanced management model. After careful study, it was decided that a combination of the best elements from each of these management approaches would best implement uniform policies for a critical resource like the Sound, as well as maintain local prerogatives. It would provide a system of checks and balances by relying on the state to formulate guidelines, local government to plan for its portion of the shoreline, and groups of local governments to manage regional portions of the coastal zone. It would use governments and entities which are in place and would allow for maximum reconciliation of differences. It would not create a new bureaucracy. It would employ a ladder principle to move coastal zone management up from one level of government to the next, if performance at the lower level did not meet prescribed guidelines.

RECOMMENDATION

1. Each state should establish a coastal zone management entity or group to guide the development of a management program and assure its implementation. This group should be staffed by, and function within, existing state agencies exercising project review powers.

Each group should be composed of representatives of the state departments involved, the county governments or regional planning agencies abutting the Sound, and enough public representatives so that they and the nonstate people outnumber the state representatives.

Each state would delegate authority to groups of localities who would be responsible for coastal zone management. These intermediate agencies between the state and local government would have to be constituted with locally elected officials, proportionally representative of its members (one man, one vote) and have adequate staff and resources to get the job done.

In New York, the management program could be carried out by the three counties, all of which have elected executives and legislative bodies. Alternatively, on Long Island the regulatory power could be delegated to the Nassau-Suffolk Regional Planning Board.

Since counties do not exist in Connecticut, the only likely candidates are regional councils of elected officials (RCEO), regional councils of government (RCOG), or regional planning agencies (RPA). Because they already exist in the coastal region, are performing similar functions, are proportionally representative, and could include elected officials by local modification of laws without new state legislation, delegation of the appropriate authority to the five Connecticut coastal RPAs is favored. Any new powers conferred on delegate agencies would be made available to New York City. Continuing financial aid would be given to intermediate agencies.

Connecticut and New York would adopt a single statement of purpose and compatible sets of criteria, guidelines, and standards for Long Island Sound, including a definition of the regulated coastal zone. For this study, an area from the state's territorial limits to 500 feet inland of mean high water or to the ten foot elevation, whichever is larger, was used as a basis for discussion. This definition is one of many which are workable for this recommendation. The states and towns would determine a final definition.

All Sound-bordering municipalities would be required to develop local conservation and development plans amending existing plans or creating new ones. Such plans would identify and designate environmentally critical areas and areas of present or potential public access. Financial and technical assistance for planning and administration would be made available to localities.

Intermediate agencies composed of groups of municipalities would review local conservation and development plans for consistency with one another and with state guidelines. In the event of an inconsistency, the intermediate agency may prohibit development or require an acceptable plan. A regional coastal zone plan would be formed as a composite of and supplement to local conservation and development plans by the agency.

In the event that municipalities do not act within two years, the intermediate agencies would develop a plan and promulgate appropriate regulations.

Development would be permitted if, in the view of the intermediate agency, it was consistent with the local plan, there was no significant adverse environmental impact, and there was no substantial adverse impact on access to the Sound.

All development in the coastal zone except for developments of statewide concern or of only local concern would be subject to issuance of permits by the intermediate agencies following a public hearing. Municipalities could override negative decisions by a two-thirds vote of their governing bodies, with an appeals process allowing any person or town aggrieved by a decision of the delegate agency to go to the state. After that, appeals would be a matter of judicial review. This provision is designed to assure that regional and state interests in the use of the Long Island Sound's shoreline and the Sound itself are adequately considered in the decision making process, while at the same time preserving the municipality's option to override where its vital interests are at stake.

Interstate coordination would be furnished by frequent joint meetings of the two states' coastal zone management groups. The areas of such coordination include fisheries management, marine transportation, dredge spoils disposal and major development proposals, such as oil refineries, jet ports, bridges, and artificial islands. Between meetings, a joint executive committee with staff would operate similarly to and as a continuation of the interstate aspects of the interim program described above.

This committee could monitor developing issues and prepare action documents. The Governors could call special meetings, depending upon the urgency of particular situations. Interstate coastal zone planning and management interests could be represented by such agencies as the Interstate Sanitation Commission, the Tri-State Regional Planning Commission, and the New England River Basins Commission, in the joint Long Island Sound Coastal Zone Management group meetings. Of course, consideration could again be given to a bistate compact, if it should become clear that policy, program, regulation, or enforcement gaps remain.

Environmental Impact Statement Summary
Long Island Sound Regional Study

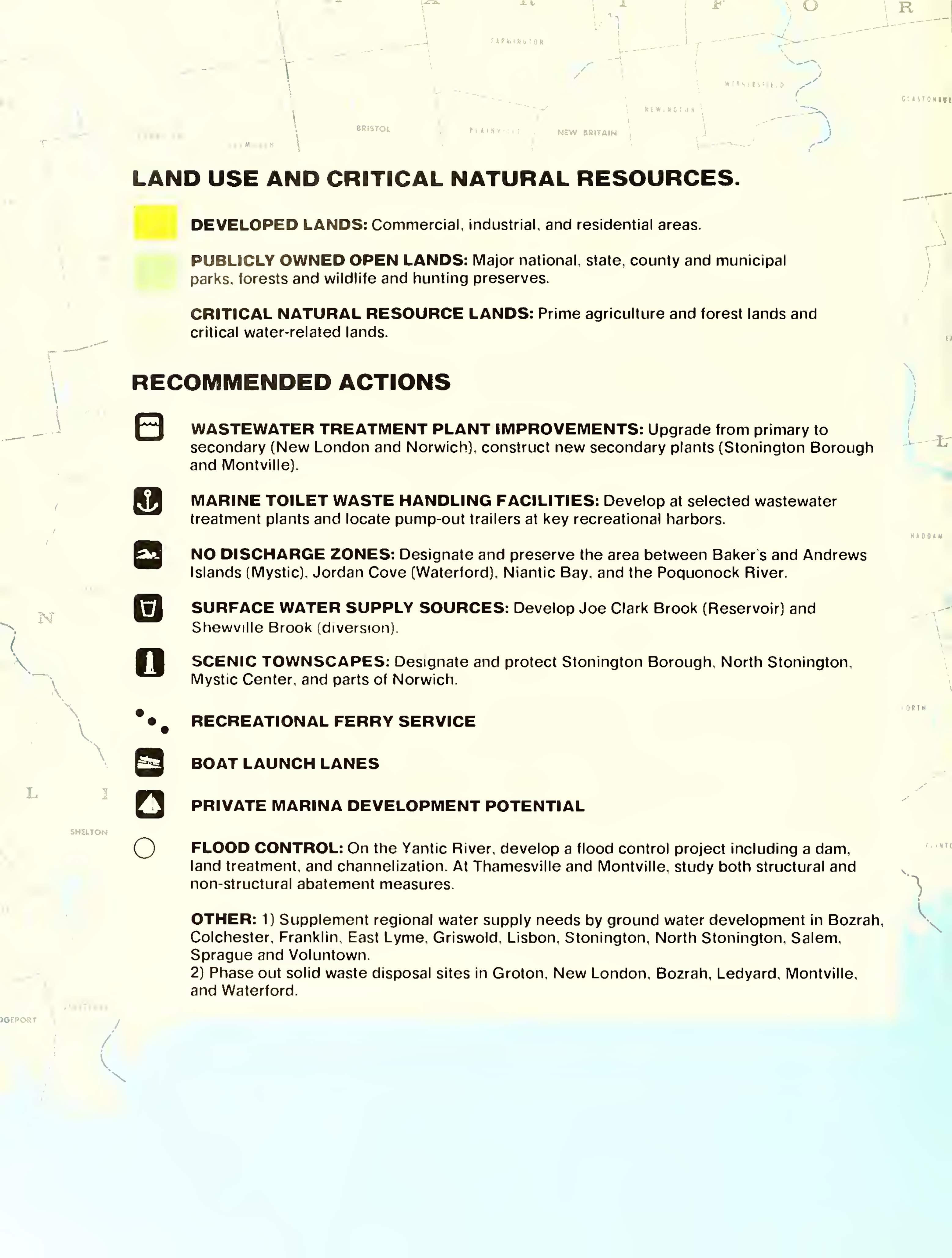
Connecticut and New York
( ) Draft (X) Final
Responsible Agency:
New England River Basins Commission
270 Orange Street
New Haven, Connecticut

1. **Name of Action** (X) Administrative
( ) Legislative
2. **Brief Description of Action.** The New England River Basins Commission is submitting to the U.S. Water Resources Council, for transmittal to the President and by him to the Congress, a plan of action balancing the needs to protect, conserve, and wisely develop Long Island Sound in Connecticut and New York, and its related shorelands as a major economic and life enriching resource for the region's people. A study of the waters, lands, biology, and people of the Sound, and the problems created by the mixture of those factors, has been completed. A plan is recommended to solve these problems, with a focus on 1990 needs against the backdrop of long-range, fifty-year needs. Recommendations are made in the following areas: water quality and water supply; land use and open space; recreation; sport fisheries and wildlife; shoreline appearance and design; marine transportation; electric power; commercial fishing; mining; flood damage reduction; and, erosion and sedimentation. Parts of the states of Connecticut and New York are particularly affected, including parts of the following counties: (Connecticut) Fairfield, New Haven, Middlesex, New London; (New York) Westchester, Bronx, Queens, Nassau, Suffolk.
3. **Environmental Impacts.** Recommendations have impacts and were evaluated for the following factors: environmental quality, including natural beauty; land (erosion, sedimentation, and land use patterns); water quality and air quality; ecological systems, including terrestrial plants and animals, aquatic plants and aquatic animals (anadromous cold water resident species and warm water resident species); scarce resources including archeological-historical, biological, and geological.

   Adverse environmental effects were found for each of the above factors for at least some of the recommended measures. However, these were generally outweighed by concomitant beneficial environmental effects for those same factors for other of the recommended alternative measures, so that there were no net adverse environmental effects.
4. **Alternatives.** For each of eighty recommendations, an average of four alternatives were evaluated. There were ten subject areas of study and approximately 500 alternatives analyzed, ranging from a non-structural, non-regulatory approach to various scales of development, projected to meet clearly foreseeable needs. These alternatives are summarized in the body of the environmental statement.
5. **Comments Requested.** Comments and views have been requested from the Governors of each of the New England states and New York, the head of each federal department or agency, each interstate agency from which a member of this commission has been appointed, and over 100 local agencies and interest groups. List is contained in the main report of the Long Island Regional Study, of which this statement—broad program type—is a part.
6. **Draft Statement to CEQ:** December 3, 1974.
Final Statement to CEQ: [To be submitted by the U.S. Water Resources Council at the time of transmittal to the President and the Congress]

Map Folio

The following section shows the proposals of the Long Island Sound Study for each of its nine subregions. Most of these proposals will need more detailed site specific study, as well as public scrutiny and support, before they can be implemented. The land use and natural resource information shown on each of these maps is a graphic simplification of the more detailed information presented in the fold-out regional *Land Use and Critical Natural Resources Map.*



LAND USE AND CRITICAL NATURAL RESOURCES.

🟨 **DEVELOPED LANDS:** Commercial, industrial, and residential areas.

🟩 **PUBLICLY OWNED OPEN LANDS:** Major national, state, county and municipal parks, forests and wildlife and hunting preserves.

CRITICAL NATURAL RESOURCE LANDS: Prime agriculture and forest lands and critical water-related lands.

RECOMMENDED ACTIONS

WASTEWATER TREATMENT PLANT IMPROVEMENTS: Upgrade from primary to secondary (New London and Norwich), construct new secondary plants (Stonington Borough and Montville).

⚓ **MARINE TOILET WASTE HANDLING FACILITIES:** Develop at selected wastewater treatment plants and locate pump-out trailers at key recreational harbors.

NO DISCHARGE ZONES: Designate and preserve the area between Baker's and Andrews Islands (Mystic), Jordan Cove (Waterford), Niantic Bay, and the Poquonock River.

SURFACE WATER SUPPLY SOURCES: Develop Joe Clark Brook (Reservoir) and Shewville Brook (diversion).

SCENIC TOWNSCAPES: Designate and protect Stonington Borough, North Stonington, Mystic Center, and parts of Norwich.

••• **RECREATIONAL FERRY SERVICE**

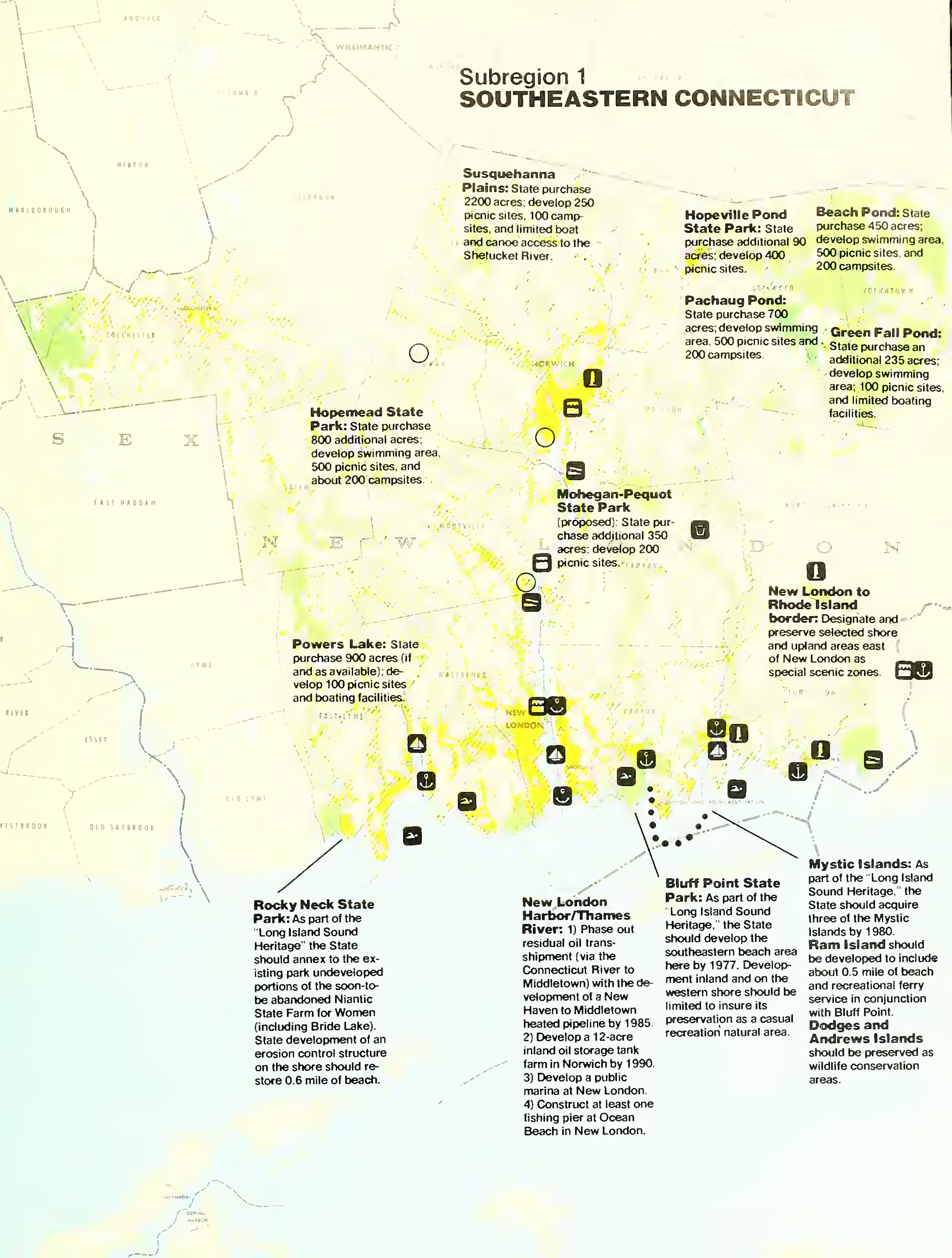
BOAT LAUNCH LANES

▲ **PRIVATE MARINA DEVELOPMENT POTENTIAL**

○ **FLOOD CONTROL:** On the Yantic River, develop a flood control project including a dam, land treatment, and channelization. At Thamesville and Montville, study both structural and non-structural abatement measures.

OTHER: 1) Supplement regional water supply needs by ground water development in Bozrah, Colchester, Franklin, East Lyme, Griswold, Lisbon, Stonington, North Stonington, Salem, Sprague and Voluntown.
2) Phase out solid waste disposal sites in Groton, New London, Bozrah, Ledyard, Montville, and Waterford.

Subregion 1
SOUTHEASTERN CONNECTICUT



Susquehanna Plains: State purchase 2200 acres; develop 250 picnic sites, 100 campsites, and limited boat and canoe access to the Shetucket River.

Hopeville Pond State Park: State purchase additional 90 acres; develop 400 picnic sites.

Beach Pond: State purchase 450 acres; develop swimming area, 500 picnic sites, and 200 campsites.

Pachaug Pond: State purchase 700 acres; develop swimming area, 500 picnic sites and 200 campsites.

Green Fall Pond: State purchase an additional 235 acres; develop swimming area; 100 picnic sites, and limited boating facilities.

Hopemead State Park: State purchase 800 additional acres; develop swimming area, 500 picnic sites, and about 200 campsites.

Mohegan-Pequot State Park (proposed): State purchase additional 350 acres; develop 200 picnic sites.

New London to Rhode Island border: Designate and preserve selected shore and upland areas east of New London as special scenic zones.

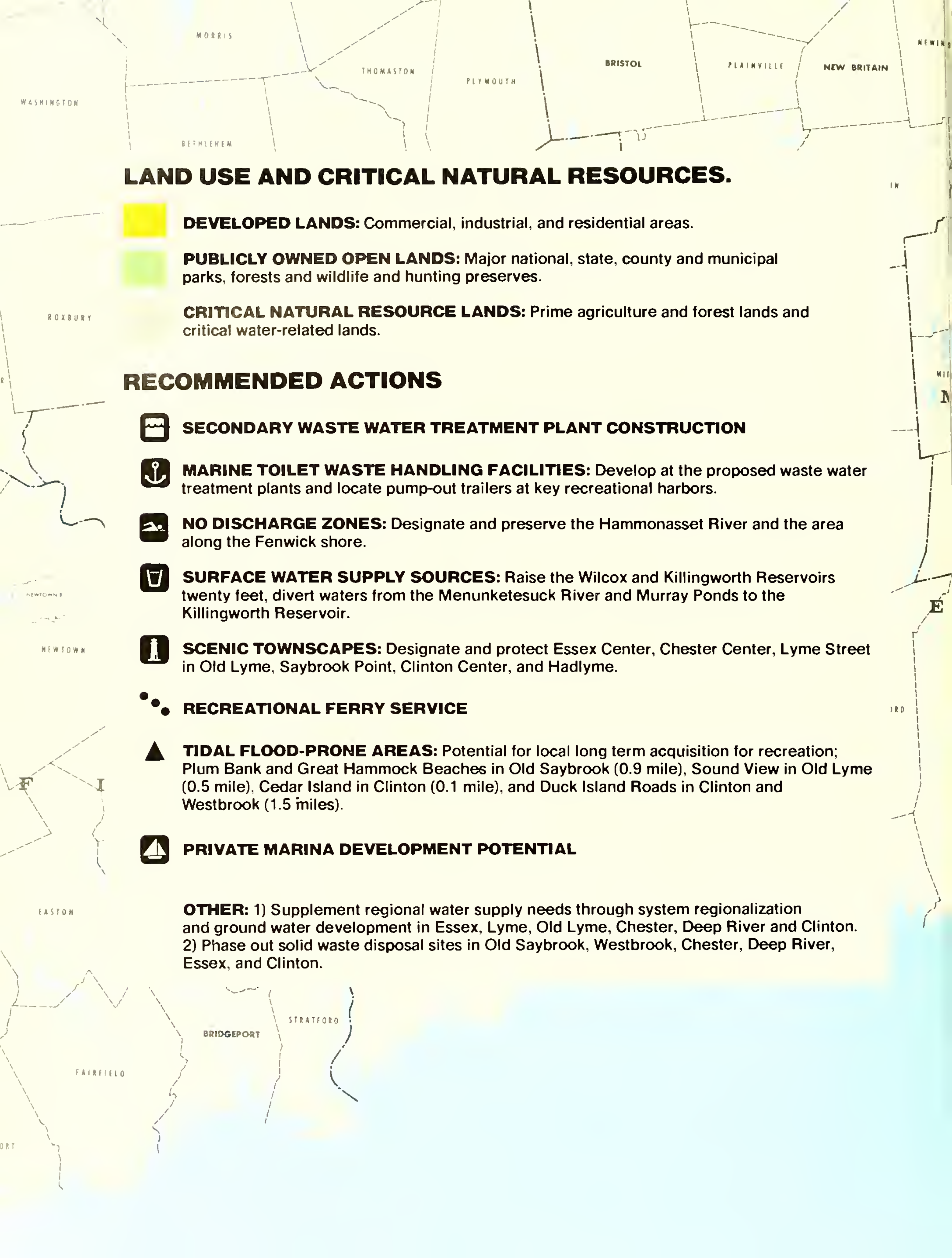
Powers Lake: State purchase 900 acres (if and as available); develop 100 picnic sites and boating facilities.

Rocky Neck State Park: As part of the "Long Island Sound Heritage" the State should annex to the existing park undeveloped portions of the soon-to-be abandoned Niantic State Farm for Women (including Bride Lake). State development of an erosion control structure on the shore should restore 0.6 mile of beach.

New London Harbor/Thames River: 1) Phase out residual oil transshipment (via the Connecticut River to Middletown) with the development of a New Haven to Middletown heated pipeline by 1985. 2) Develop a 12-acre inland oil storage tank farm in Norwich by 1990. 3) Develop a public marina at New London. 4) Construct at least one fishing pier at Ocean Beach in New London.

Bluff Point State Park: As part of the "Long Island Sound Heritage," the State should develop the southeastern beach area here by 1977. Development inland and on the western shore should be limited to insure its preservation as a casual recreation natural area.

Mystic Islands: As part of the "Long Island Sound Heritage," the State should acquire three of the Mystic Islands by 1980. **Ram Island** should be developed to include about 0.5 mile of beach and recreational ferry service in conjunction with Bluff Point. **Dodges and Andrews Islands** should be preserved as wildlife conservation areas.



LAND USE AND CRITICAL NATURAL RESOURCES.

🟨 **DEVELOPED LANDS:** Commercial, industrial, and residential areas.

🟩 **PUBLICLY OWNED OPEN LANDS:** Major national, state, county and municipal parks, forests and wildlife and hunting preserves.

CRITICAL NATURAL RESOURCE LANDS: Prime agriculture and forest lands and critical water-related lands.

RECOMMENDED ACTIONS

SECONDARY WASTE WATER TREATMENT PLANT CONSTRUCTION

⚓ **MARINE TOILET WASTE HANDLING FACILITIES:** Develop at the proposed waste water treatment plants and locate pump-out trailers at key recreational harbors.

🏊 **NO DISCHARGE ZONES:** Designate and preserve the Hammonasset River and the area along the Fenwick shore.

SURFACE WATER SUPPLY SOURCES: Raise the Wilcox and Killingworth Reservoirs twenty feet, divert waters from the Menunketesuck River and Murray Ponds to the Killingworth Reservoir.

SCENIC TOWNSCAPES: Designate and protect Essex Center, Chester Center, Lyme Street in Old Lyme, Saybrook Point, Clinton Center, and Hadlyme.

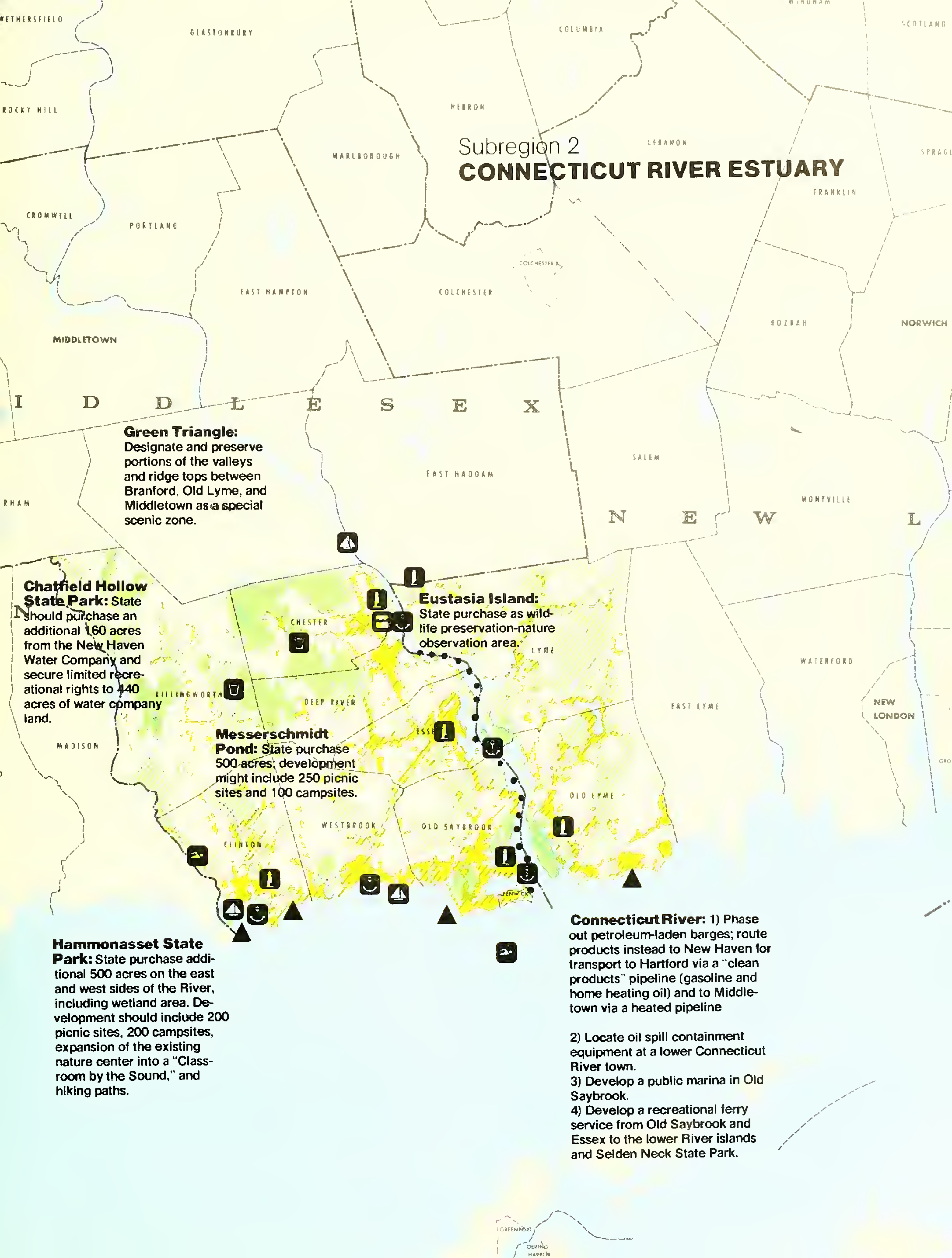
••• **RECREATIONAL FERRY SERVICE**

▲ **TIDAL FLOOD-PRONE AREAS:** Potential for local long term acquisition for recreation; Plum Bank and Great Hammock Beaches in Old Saybrook (0.9 mile), Sound View in Old Lyme (0.5 mile), Cedar Island in Clinton (0.1 mile), and Duck Island Roads in Clinton and Westbrook (1.5 miles).

⛵ **PRIVATE MARINA DEVELOPMENT POTENTIAL**

OTHER: 1) Supplement regional water supply needs through system regionalization and ground water development in Essex, Lyme, Old Lyme, Chester, Deep River and Clinton. 2) Phase out solid waste disposal sites in Old Saybrook, Westbrook, Chester, Deep River, Essex, and Clinton.

Subregion 2
CONNECTICUT RIVER ESTUARY



Green Triangle: Designate and preserve portions of the valleys and ridge tops between Branford, Old Lyme, and Middletown as a special scenic zone.

Chatfield Hollow State Park: State should purchase an additional 160 acres from the New Haven Water Company and secure limited recreational rights to 440 acres of water company land.

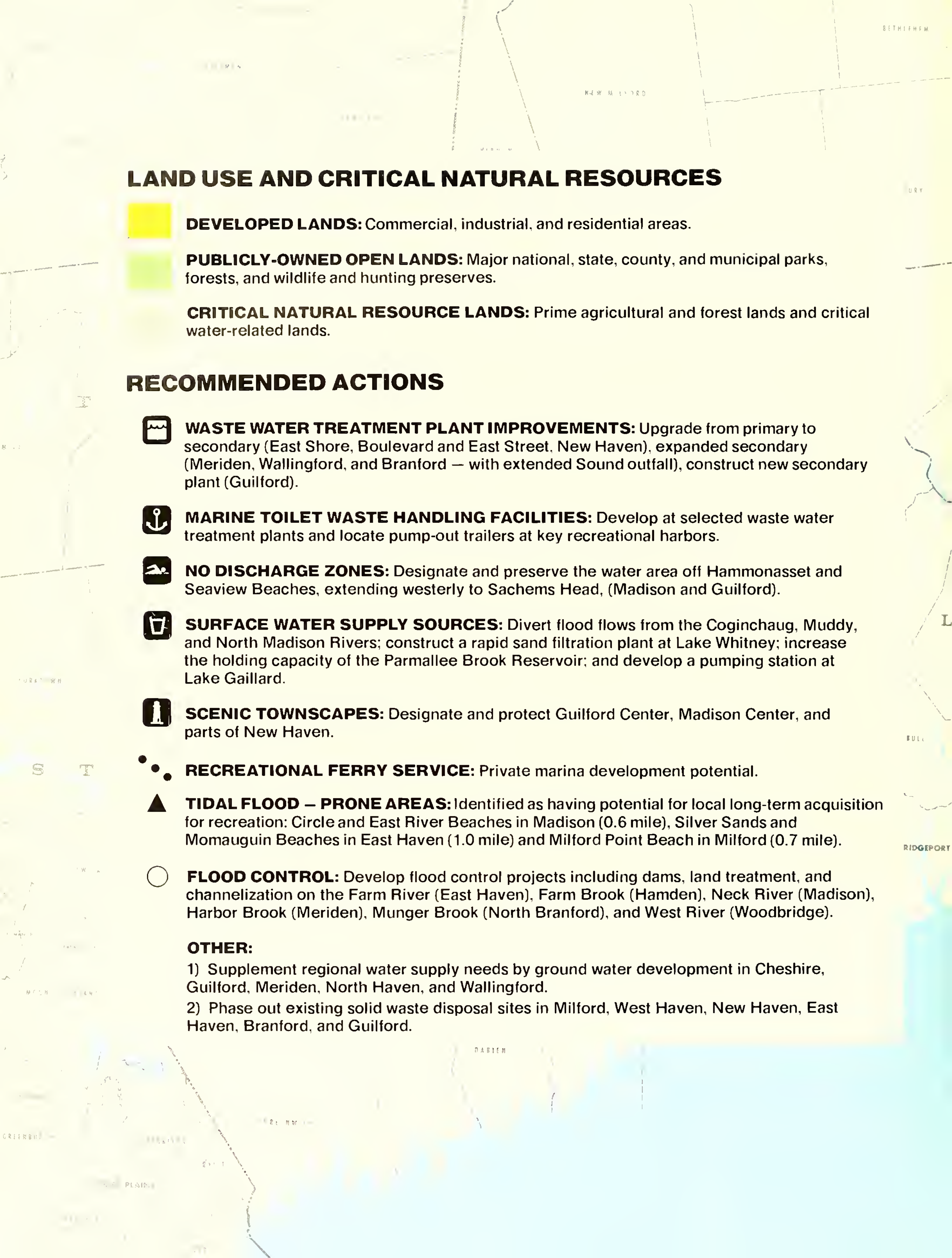
Eustasia Island: State purchase as wildlife preservation-nature observation area.

Messerschmidt Pond: State purchase 500 acres; development might include 250 picnic sites and 100 campsites.

Hammonasset State Park: State purchase additional 500 acres on the east and west sides of the River, including wetland area. Development should include 200 picnic sites, 200 campsites, expansion of the existing nature center into a "Classroom by the Sound," and hiking paths.

Connecticut River: 1) Phase out petroleum-laden barges; route products instead to New Haven for transport to Hartford via a "clean products" pipeline (gasoline and home heating oil) and to Middletown via a heated pipeline

2) Locate oil spill containment equipment at a lower Connecticut River town.
3) Develop a public marina in Old Saybrook.
4) Develop a recreational ferry service from Old Saybrook and Essex to the lower River islands and Selden Neck State Park.



LAND USE AND CRITICAL NATURAL RESOURCES

🟨 **DEVELOPED LANDS:** Commercial, industrial, and residential areas.

🟩 **PUBLICLY-OWNED OPEN LANDS:** Major national, state, county, and municipal parks, forests, and wildlife and hunting preserves.

▨ **CRITICAL NATURAL RESOURCE LANDS:** Prime agricultural and forest lands and critical water-related lands.

RECOMMENDED ACTIONS

■ **WASTE WATER TREATMENT PLANT IMPROVEMENTS:** Upgrade from primary to secondary (East Shore, Boulevard and East Street, New Haven), expanded secondary (Meriden, Wallingford, and Branford — with extended Sound outfall), construct new secondary plant (Guilford).

⚓ **MARINE TOILET WASTE HANDLING FACILITIES:** Develop at selected waste water treatment plants and locate pump-out trailers at key recreational harbors.

■ **NO DISCHARGE ZONES:** Designate and preserve the water area off Hammonasset and Seaview Beaches, extending westerly to Sachems Head, (Madison and Guilford).

■ **SURFACE WATER SUPPLY SOURCES:** Divert flood flows from the Coginchaug, Muddy, and North Madison Rivers; construct a rapid sand filtration plant at Lake Whitney; increase the holding capacity of the Parmallee Brook Reservoir; and develop a pumping station at Lake Gaillard.

■ **SCENIC TOWNSCAPES:** Designate and protect Guilford Center, Madison Center, and parts of New Haven.

● ● ● **RECREATIONAL FERRY SERVICE:** Private marina development potential.

▲ **TIDAL FLOOD – PRONE AREAS:** Identified as having potential for local long-term acquisition for recreation: Circle and East River Beaches in Madison (0.6 mile), Silver Sands and Momauguin Beaches in East Haven (1.0 mile) and Milford Point Beach in Milford (0.7 mile).

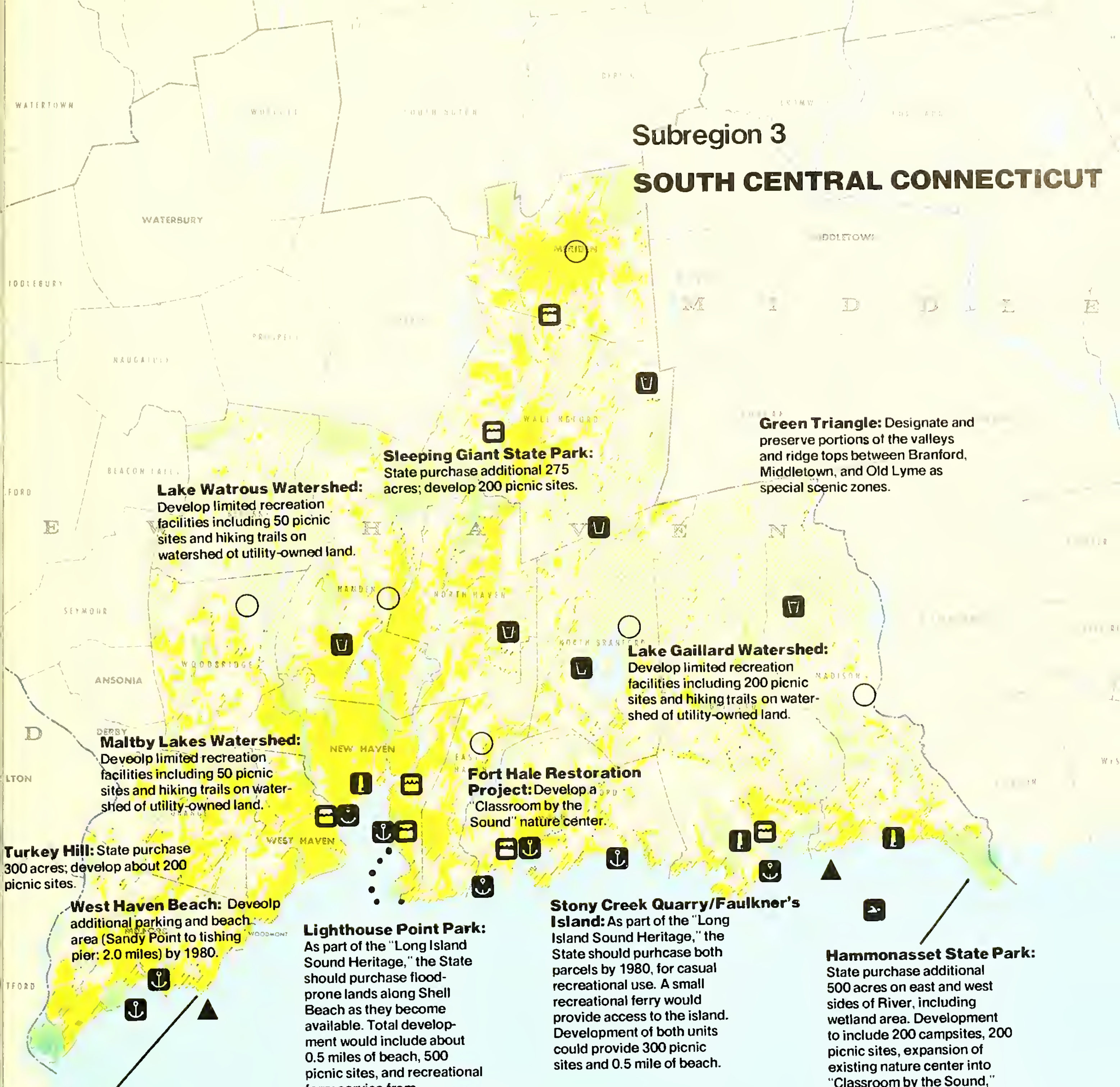
○ **FLOOD CONTROL:** Develop flood control projects including dams, land treatment, and channelization on the Farm River (East Haven), Farm Brook (Hamden), Neck River (Madison), Harbor Brook (Meriden), Munger Brook (North Branford), and West River (Woodbridge).

OTHER:

1) Supplement regional water supply needs by ground water development in Cheshire, Guilford, Meriden, North Haven, and Wallingford.

2) Phase out existing solid waste disposal sites in Milford, West Haven, New Haven, East Haven, Branford, and Guilford.

Subregion 3
SOUTH CENTRAL CONNECTICUT



Sleeping Giant State Park: State purchase additional 275 acres; develop 200 picnic sites.

Green Triangle: Designate and preserve portions of the valleys and ridge tops between Branford, Middletown, and Old Lyme as special scenic zones.

Lake Watrous Watershed: Develop limited recreation facilities including 50 picnic sites and hiking trails on watershed ot utility-owned land.

Lake Gaillard Watershed: Develop limited recreation facilities including 200 picnic sites and hiking trails on watershed of utility-owned land.

Maltby Lakes Watershed: Deveolp limited recreation facilities including 50 picnic sites and hiking trails on watershed of utility-owned land.

Fort Hale Restoration Project: Develop a "Classroom by the Sound" nature center.

Turkey Hill: State purchase 300 acres; develop about 200 picnic sites.

West Haven Beach: Deveolp additional parking and beach area (Sandy Point to fishing pier: 2.0 miles) by 1980.

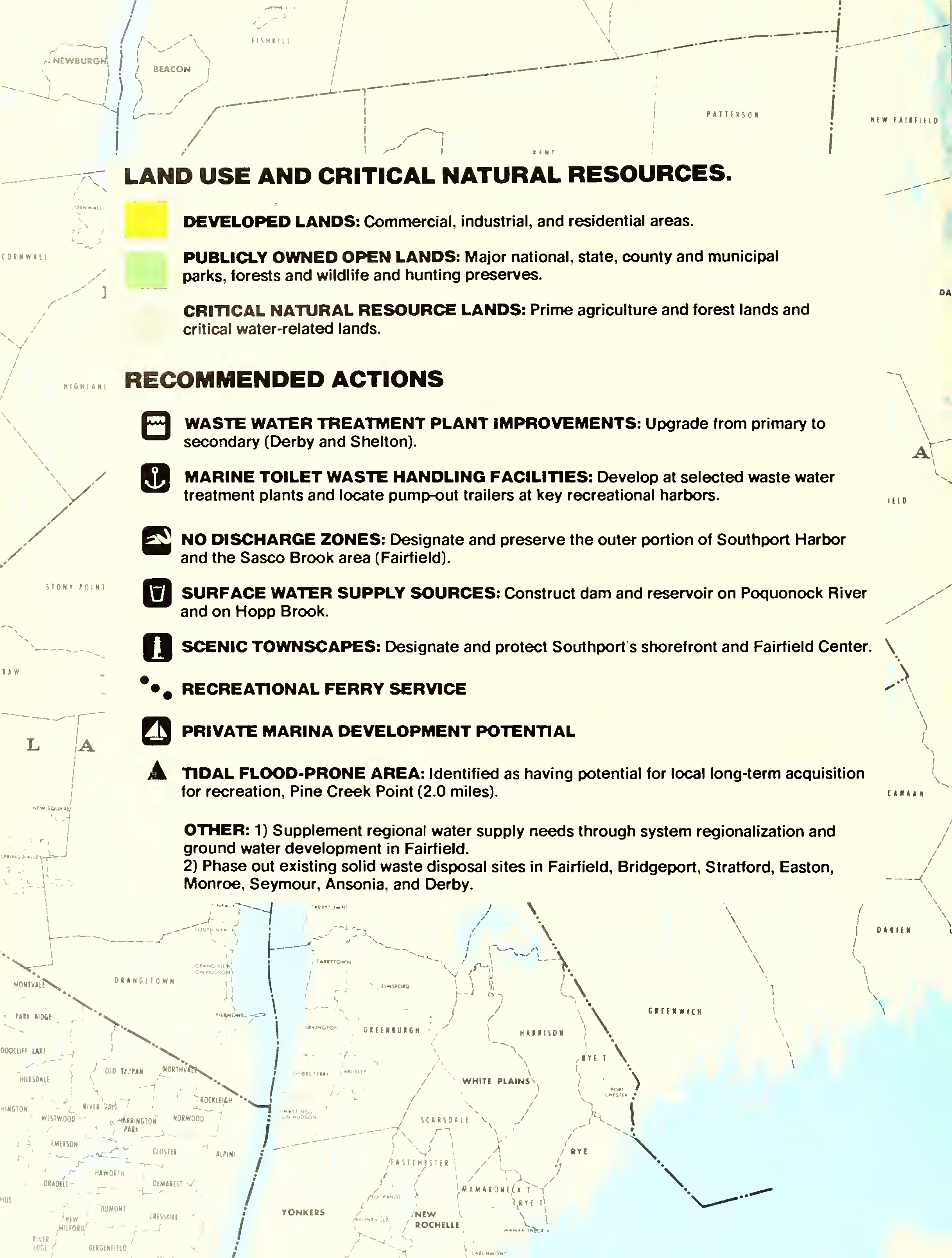
Lighthouse Point Park: As part of the "Long Island Sound Heritage," the State should purchase flood-prone lands along Shell Beach as they become available. Total development would include about 0.5 miles of beach, 500 picnic sites, and recreational ferry service from New Haven.

Stony Creek Quarry/Faulkner's Island: As part of the "Long Island Sound Heritage," the State should purhcase both parcels by 1980, for casual recreational use. A small recreational ferry would provide access to the island. Development of both units could provide 300 picnic sites and 0.5 mile of beach.

Hammonasset State Park: State purchase additional 500 acres on east and west sides of River, including wetland area. Development to include 200 campsites, 200 picnic sites, expansion of existing nature center into "Classroom by the Sound," and hiking paths.

Silver Sands State Park: As part of the "Long Island Sound Heritage", the State should purchase Charles Island and additional flood-prone portions of Fort Trumbull Beach by 1980. Development could include boardwalk-fishing pier to island, about 2.0 miles beach, 500 picnic sites, and a small public marina.

New Haven Harbor: 1) Dredge channel to 40 feet, to receive large oil tankers by 1985.
2) Develop a heated pipeline to Middletown, to transport residual oil, by 1985.
3) Develop an offshore berth with submarine pipeline for gasoline and home heating oil by 1985, to operate in conjunction with pipeline to Hartford and Springfield, Mass.
4) Relocate ¾ existing harborfront oil storage tanks to inland sites.
5) Initiate major harbor debris clean-up program by 1980.
6) Develop year-round ferry service to Shoreham-Wading River area of Long Island.
7) Develop a public marina.
8) Construct a fishing pier (in the City Point area) and a fish reef.



LAND USE AND CRITICAL NATURAL RESOURCES.

🟨 **DEVELOPED LANDS:** Commercial, industrial, and residential areas.

🟩 **PUBLICLY OWNED OPEN LANDS:** Major national, state, county and municipal parks, forests and wildlife and hunting preserves.

CRITICAL NATURAL RESOURCE LANDS: Prime agriculture and forest lands and critical water-related lands.

RECOMMENDED ACTIONS

WASTE WATER TREATMENT PLANT IMPROVEMENTS: Upgrade from primary to secondary (Derby and Shelton).

⚓ **MARINE TOILET WASTE HANDLING FACILITIES:** Develop at selected waste water treatment plants and locate pump-out trailers at key recreational harbors.

NO DISCHARGE ZONES: Designate and preserve the outer portion of Southport Harbor and the Sasco Brook area (Fairfield).

SURFACE WATER SUPPLY SOURCES: Construct dam and reservoir on Poquonock River and on Hopp Brook.

SCENIC TOWNSCAPES: Designate and protect Southport's shorefront and Fairfield Center.

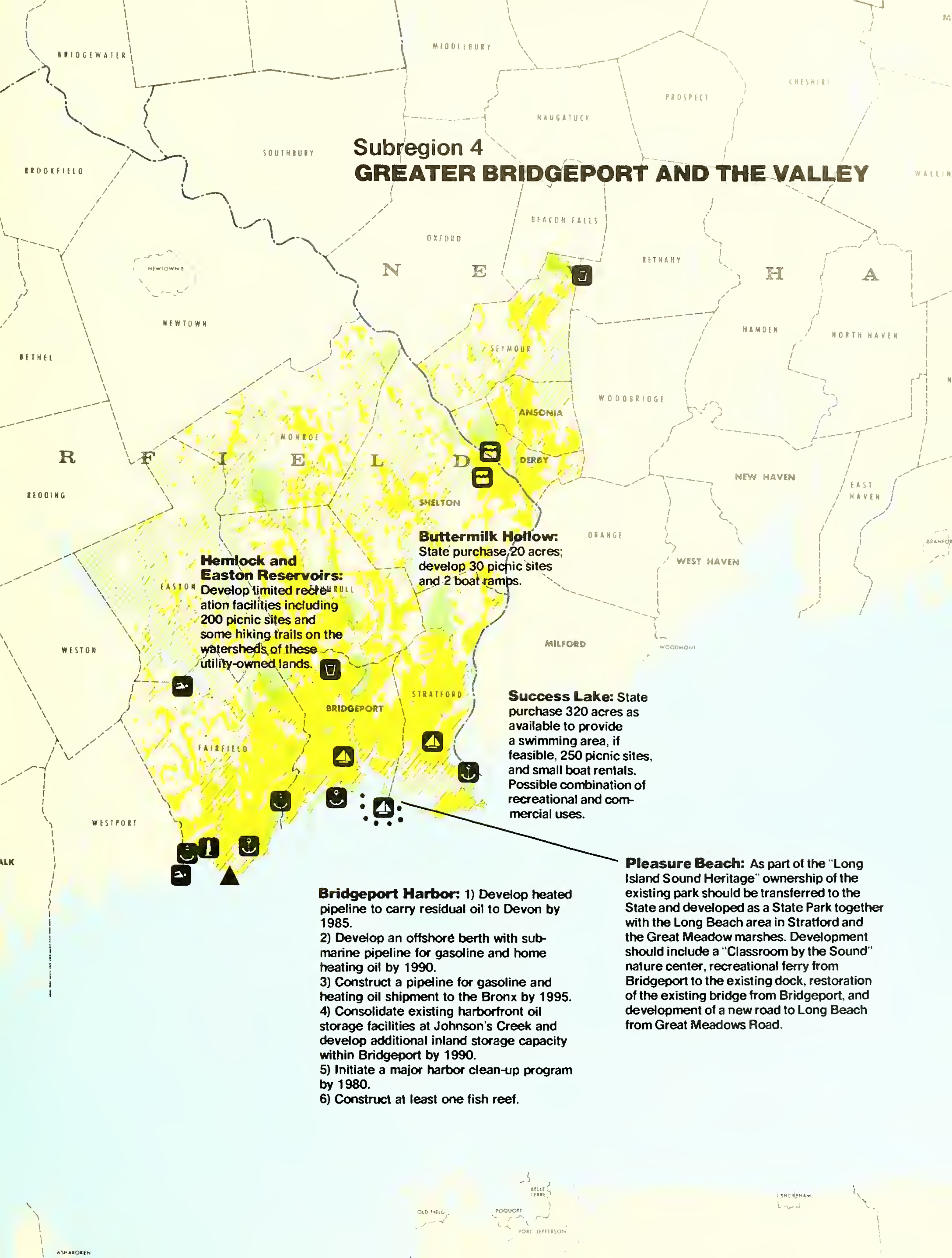
● ● ● **RECREATIONAL FERRY SERVICE**

PRIVATE MARINA DEVELOPMENT POTENTIAL

▲ **TIDAL FLOOD-PRONE AREA:** Identified as having potential for local long-term acquisition for recreation, Pine Creek Point (2.0 miles).

OTHER: 1) Supplement regional water supply needs through system regionalization and ground water development in Fairfield.
2) Phase out existing solid waste disposal sites in Fairfield, Bridgeport, Stratford, Easton, Monroe, Seymour, Ansonia, and Derby.

Subregion 4
GREATER BRIDGEPORT AND THE VALLEY



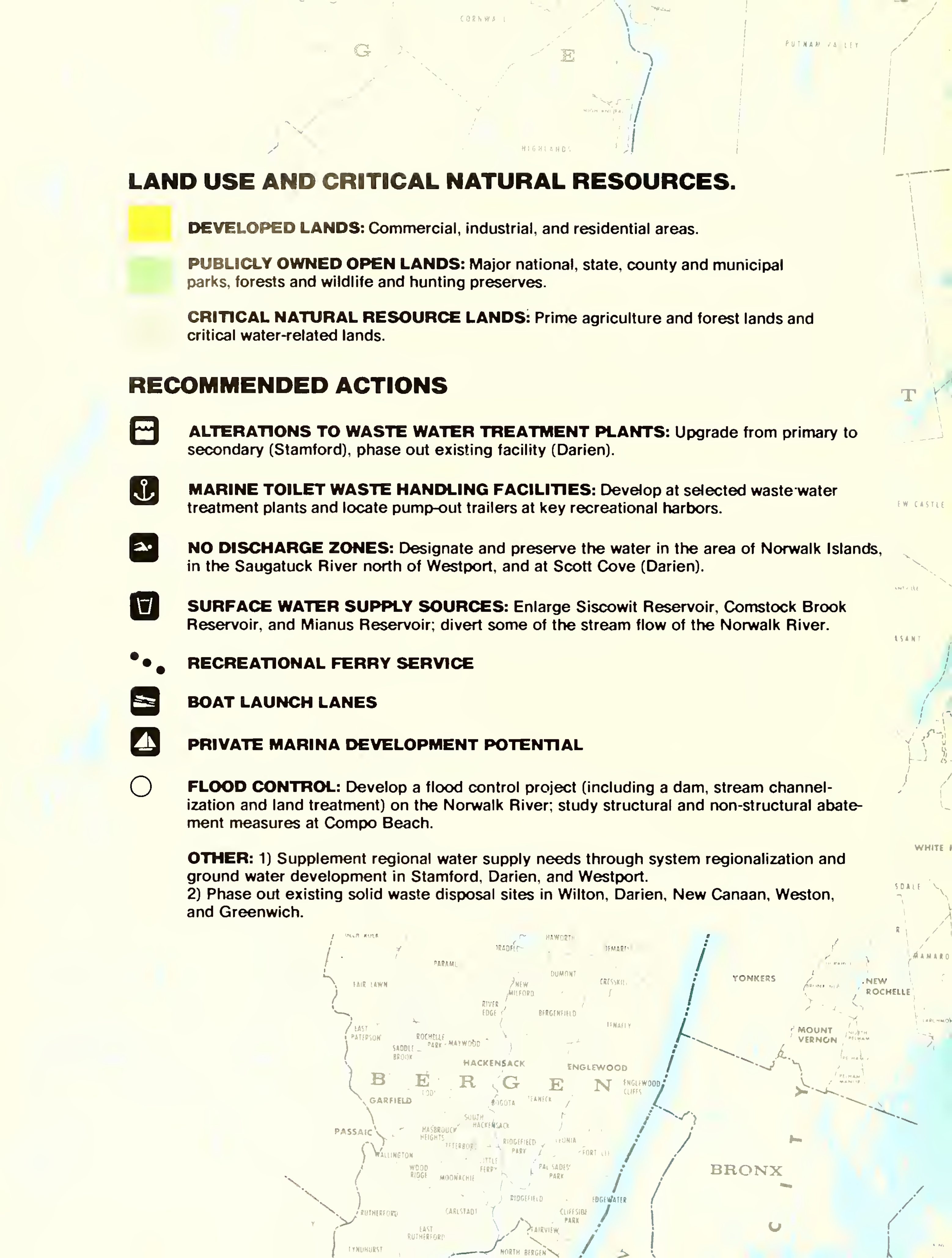
Buttermilk Hollow: State purchase 20 acres; develop 30 picnic sites and 2 boat ramps.

Hemlock and Easton Reservoirs: Develop limited recreation facilities including 200 picnic sites and some hiking trails on the watersheds of these utility-owned lands.

Success Lake: State purchase 320 acres as available to provide a swimming area, if feasible, 250 picnic sites, and small boat rentals. Possible combination of recreational and commercial uses.

Pleasure Beach: As part of the "Long Island Sound Heritage" ownership of the existing park should be transferred to the State and developed as a State Park together with the Long Beach area in Stratford and the Great Meadow marshes. Development should include a "Classroom by the Sound" nature center, recreational ferry from Bridgeport to the existing dock, restoration of the existing bridge from Bridgeport, and development of a new road to Long Beach from Great Meadows Road.

Bridgeport Harbor: 1) Develop heated pipeline to carry residual oil to Devon by 1985.
2) Develop an offshore berth with submarine pipeline for gasoline and home heating oil by 1990.
3) Construct a pipeline for gasoline and heating oil shipment to the Bronx by 1995.
4) Consolidate existing harborfront oil storage facilities at Johnson's Creek and develop additional inland storage capacity within Bridgeport by 1990.
5) Initiate a major harbor clean-up program by 1980.
6) Construct at least one fish reef.



LAND USE AND CRITICAL NATURAL RESOURCES.

🟨 **DEVELOPED LANDS:** Commercial, industrial, and residential areas.

🟩 **PUBLICLY OWNED OPEN LANDS:** Major national, state, county and municipal parks, forests and wildlife and hunting preserves.

CRITICAL NATURAL RESOURCE LANDS: Prime agriculture and forest lands and critical water-related lands.

RECOMMENDED ACTIONS

ALTERATIONS TO WASTE WATER TREATMENT PLANTS: Upgrade from primary to secondary (Stamford), phase out existing facility (Darien).

⚓ **MARINE TOILET WASTE HANDLING FACILITIES:** Develop at selected waste-water treatment plants and locate pump-out trailers at key recreational harbors.

NO DISCHARGE ZONES: Designate and preserve the water in the area of Norwalk Islands, in the Saugatuck River north of Westport, and at Scott Cove (Darien).

SURFACE WATER SUPPLY SOURCES: Enlarge Siscowit Reservoir, Comstock Brook Reservoir, and Mianus Reservoir; divert some of the stream flow of the Norwalk River.

● ● ● **RECREATIONAL FERRY SERVICE**

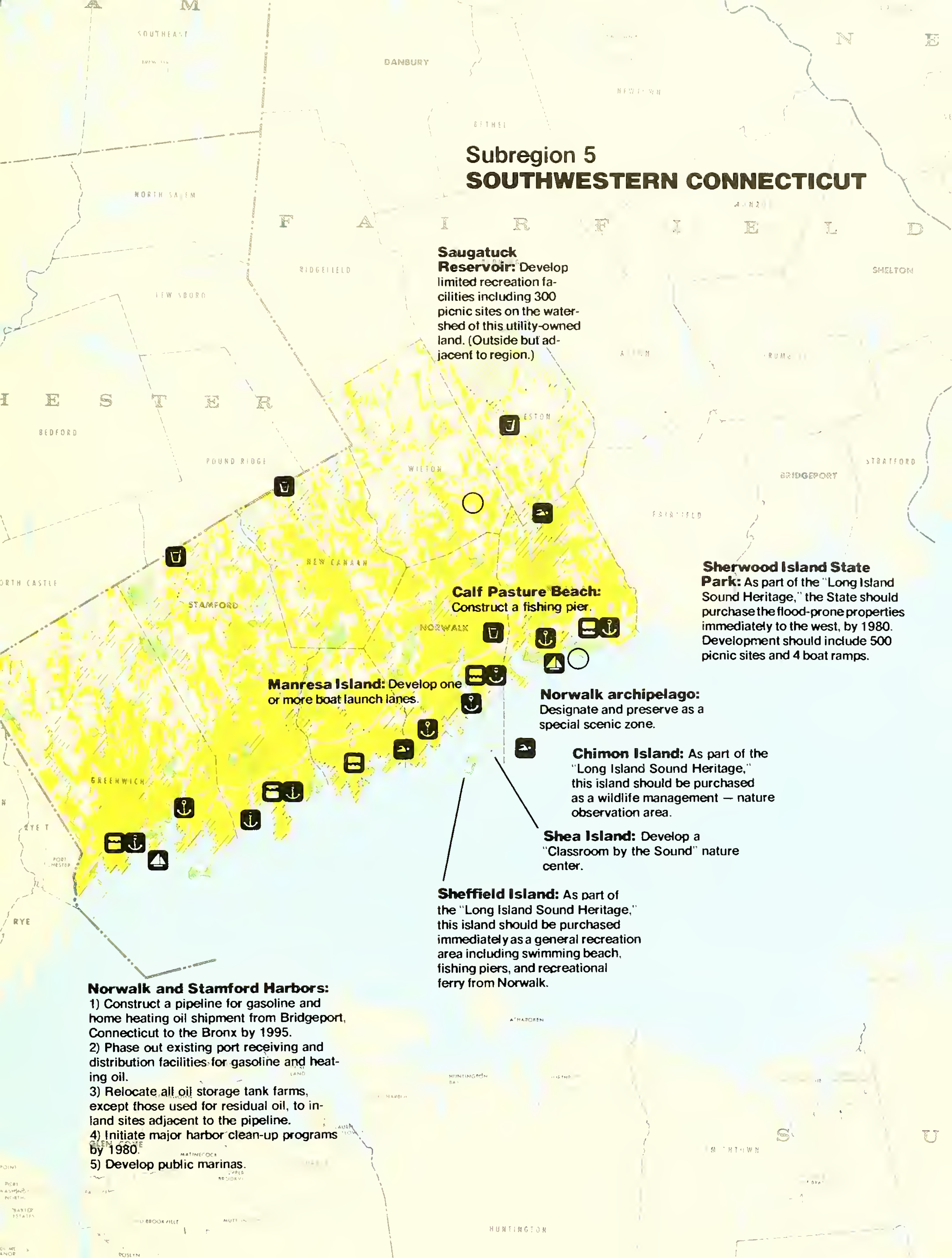
BOAT LAUNCH LANES

⛵ **PRIVATE MARINA DEVELOPMENT POTENTIAL**

○ **FLOOD CONTROL:** Develop a flood control project (including a dam, stream channelization and land treatment) on the Norwalk River; study structural and non-structural abatement measures at Compo Beach.

OTHER: 1) Supplement regional water supply needs through system regionalization and ground water development in Stamford, Darien, and Westport.
2) Phase out existing solid waste disposal sites in Wilton, Darien, New Canaan, Weston, and Greenwich.

Subregion 5
SOUTHWESTERN CONNECTICUT



Saugatuck Reservoir: Develop limited recreation facilities including 300 picnic sites on the watershed of this utility-owned land. (Outside but adjacent to region.)

Sherwood Island State Park: As part of the "Long Island Sound Heritage," the State should purchase the flood-prone properties immediately to the west, by 1980. Development should include 500 picnic sites and 4 boat ramps.

Calf Pasture Beach: Construct a fishing pier.

Manresa Island: Develop one or more boat launch lanes.

Norwalk archipelago: Designate and preserve as a special scenic zone.

Chimon Island: As part of the "Long Island Sound Heritage," this island should be purchased as a wildlife management — nature observation area.

Shea Island: Develop a "Classroom by the Sound" nature center.

Sheffield Island: As part of the "Long Island Sound Heritage," this island should be purchased immediately as a general recreation area including swimming beach, fishing piers, and recreational ferry from Norwalk.

Norwalk and Stamford Harbors:
1) Construct a pipeline for gasoline and home heating oil shipment from Bridgeport, Connecticut to the Bronx by 1995.
2) Phase out existing port receiving and distribution facilities for gasoline and heating oil.
3) Relocate all oil storage tank farms, except those used for residual oil, to inland sites adjacent to the pipeline.
4) Initiate major harbor clean-up programs by 1980.
5) Develop public marinas.

LAND USE AND CRITICAL NATURAL RESOURCES.

🟨 **DEVELOPED LANDS:** Commercial, industrial, and residential areas.

🟩 **PUBLICLY OWNED OPEN LANDS:** Major national, state, county and municipal parks, forests and wildlife and hunting preserves.

CRITICAL NATURAL RESOURCE LANDS: Prime agriculture and forest lands and critical water-related lands.

RECOMMENDED ACTIONS

▣ **ALTERATIONS TO WASTE WATER TREATMENT PLANTS:** Upgrade from primary to secondary (Mamaroneck, Port Chester, Blind Brook, and New Rochelle plants in Westchester County and the Tallman's Island, Hunt's Point, Bowery Bay, and Ward's Island plants in the Bronx and Queens, expand existing secondary waste water treatment plants (Belgrave, Great Neck Sewer District, Port Washington, and Oyster Bay), construct new secondary plants (Glen Cove and Bayville), and phase out old plants (Glen Cove and Roslyn).

⚓ **MARINE TOILET WASTE HANDLING FACILITIES:** Develop at selected waste water treatment plants.

● ● ● **RECREATIONAL FERRY SERVICE**

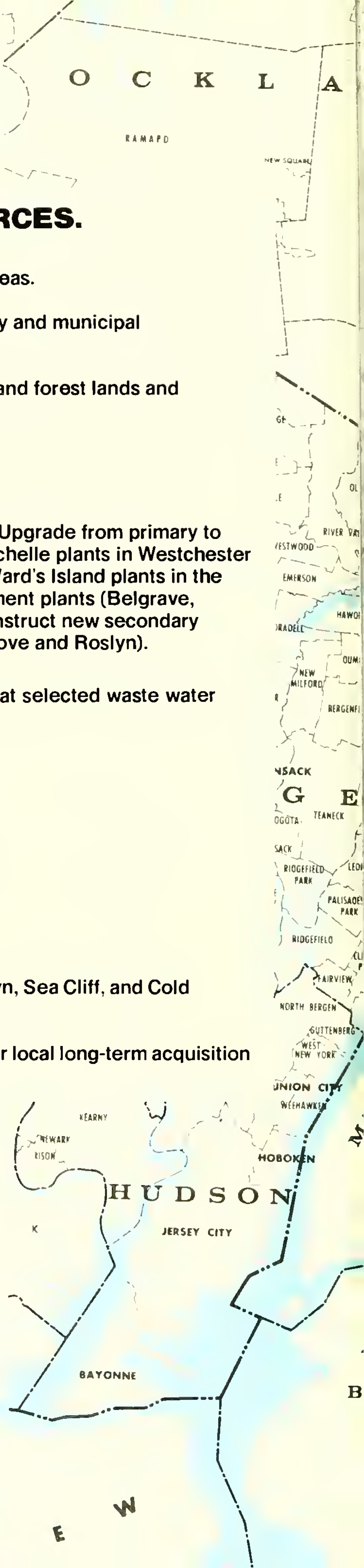
▣ **BOAT LAUNCH LANES**

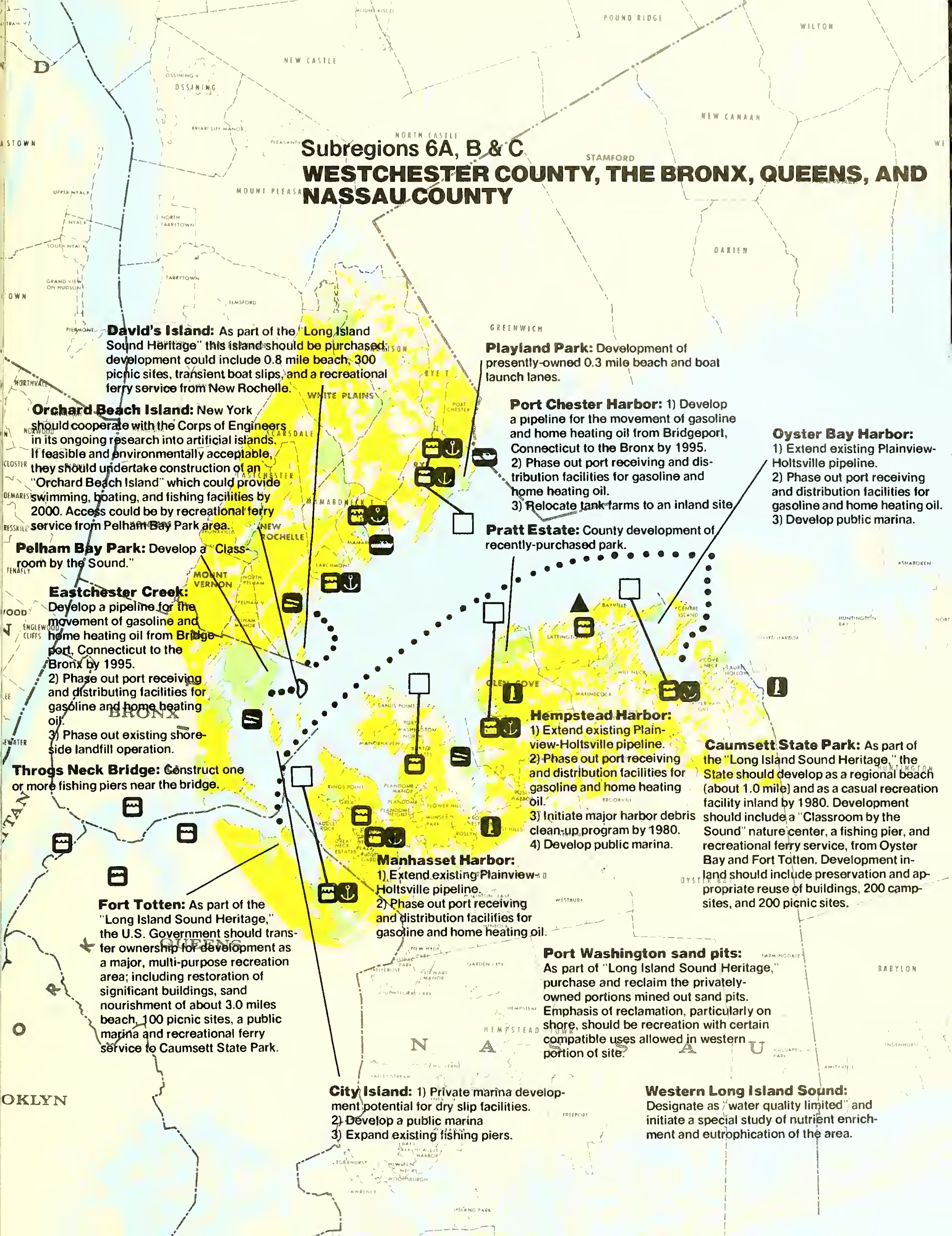
□— **PROPOSED EXTENDED SOUND OUTFALLS**

▣ **PUBLIC MARINAS**

▮ **SCENIC TOWNSCAPES:** Designate and protect villages of Roslyn, Sea Cliff, and Cold Spring Harbor.

▲ **TIDAL FLOOD-PRONE AREAS:** Identified as having potential for local long-term acquisition for recreation: area west of Stehli Beach (0.3 mile beach).





Subregions 6A, B & C

WESTCHESTER COUNTY, THE BRONX, QUEENS, AND NASSAU COUNTY

David's Island: As part of the "Long Island Sound Heritage" this island should be purchased; development could include 0.8 mile beach, 300 picnic sites, transient boat slips, and a recreational ferry service from New Rochelle.

Orchard Beach Island: New York should cooperate with the Corps of Engineers in its ongoing research into artificial islands. If feasible and environmentally acceptable, they should undertake construction of an "Orchard Beach Island" which could provide swimming, boating, and fishing facilities by 2000. Access could be by recreational ferry service from Pelham Bay Park area.

Pelham Bay Park: Develop a "Classroom by the Sound."

Eastchester Creek:
Develop a pipeline for the movement of gasoline and home heating oil from Bridgeport, Connecticut to the Bronx by 1995.
2) Phase out port receiving and distributing facilities for gasoline and home heating oil.
3) Phase out existing shoreside landfill operation.

Throgs Neck Bridge: Construct one or more fishing piers near the bridge.

Fort Totten: As part of the "Long Island Sound Heritage," the U.S. Government should transfer ownership for development as a major, multi-purpose recreation area; including restoration of significant buildings, sand nourishment of about 3.0 miles beach, 100 picnic sites, a public marina and recreational ferry service to Caumsett State Park.

City Island: 1) Private marina development potential for dry slip facilities.
2) Develop a public marina
3) Expand existing fishing piers.

Playland Park: Development of presently-owned 0.3 mile beach and boat launch lanes.

Port Chester Harbor: 1) Develop a pipeline for the movement of gasoline and home heating oil from Bridgeport, Connecticut to the Bronx by 1995.
2) Phase out port receiving and distribution facilities for gasoline and home heating oil.
3) Relocate tank farms to an inland site.

Oyster Bay Harbor:
1) Extend existing Plainview-Holtsville pipeline.
2) Phase out port receiving and distribution facilities for gasoline and home heating oil.
3) Develop public marina.

Pratt Estate: County development of recently-purchased park.

Hempstead Harbor:
1) Extend existing Plainview-Holtsville pipeline.
2) Phase out port receiving and distribution facilities for gasoline and home heating oil.
3) Initiate major harbor debris clean-up program by 1980.
4) Develop public marina.

Caumsett State Park: As part of the "Long Island Sound Heritage," the State should develop as a regional beach (about 1.0 mile) and as a casual recreation facility inland by 1980. Development should include a "Classroom by the Sound" nature center, a fishing pier, and recreational ferry service, from Oyster Bay and Fort Totten. Development inland should include preservation and appropriate reuse of buildings, 200 campsites, and 200 picnic sites.

Manhasset Harbor:
1) Extend existing Plainview-Holtsville pipeline.
2) Phase out port receiving and distribution facilities for gasoline and home heating oil.

Port Washington sand pits:
As part of "Long Island Sound Heritage," purchase and reclaim the privately-owned portions mined out sand pits. Emphasis of reclamation, particularly on shore, should be recreation with certain compatible uses allowed in western portion of site.

Western Long Island Sound:
Designate as "water quality limited" and initiate a special study of nutrient enrichment and eutrophication of the area.

LAND USE AND CRITICAL NATURAL RESOURCES.

🟨 **DEVELOPED LANDS:** Commercial, industrial, and residential areas.

🟩 **PUBLICLY OWNED OPEN LANDS:** Major national, state, county and municipal parks, forests and wildlife and hunting preserves.

⬜ **CRITICAL NATURAL RESOURCE LANDS:** Prime agriculture and forest lands and critical water-related lands.

RECOMMENDED ACTIONS

≋ **WASTE WATER TREATMENT PLANT IMPROVEMENTS:** Expand existing secondary plants (Northport, Port Jefferson, and Smithtown) and construct new secondary plants (Westplant, and Eastplant, Southold; and Elizabeth Field, Fishers Island).

⚓ **MARINE TOILET WASTE HANDLING FACILITIES:** Develop at selected waste water treatment plants.

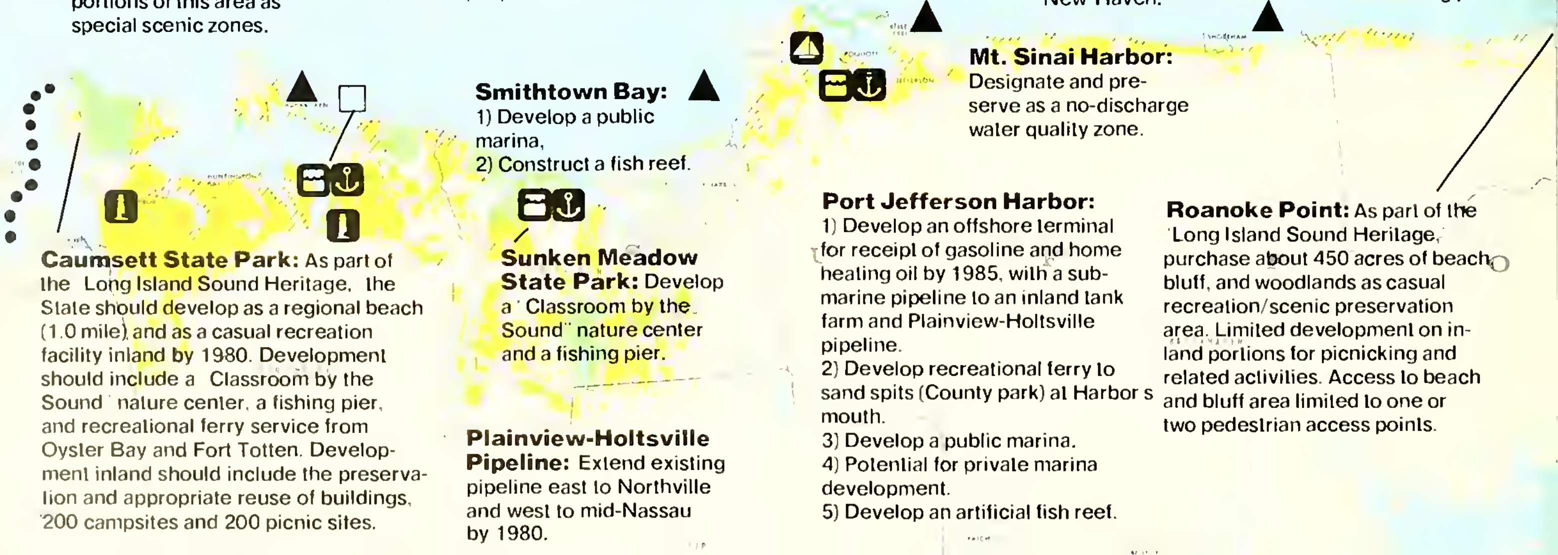
🗼 **SCENIC TOWNSCAPES:** Designate and protect villages of Cold Spring Harbor, Northport, Head of the Harbor, and Greenport Village.

●●● **RECREATIONAL FERRY SERVICE**

▲ **TIDAL FLOOD-PRONE AREAS:** Identified as having potential for local long-term acquisition for recreation, Asharoken (1.7 miles), West Meadow (1.1 miles), Mt. Sinai (0.5 mile), Wading River (0.6 mile), and Truman Beach (1.0 mile).

□— **PROPOSED EXTENDED SOUND OUTFALL**

⛵ **PRIVATE MARINA DEVELOPMENT POTENTIAL**



Eaton's Neck-Nissequogue: Designate and preserve portions of this area as special scenic zones.

Huntington Harbor: 1) Phase out existing port petroleum receiving and distributing facilities.
2) Potential for private marina development.
3) Develop a public marina.

Shoreham/Wading River: Develop a year-round ferry service to New Haven.

Wildwood State Park: Develop a "Classroom by the Sound" nature center and fishing piers.

Caumsett State Park: As part of the "Long Island Sound Heritage," the State should develop as a regional beach (1.0 mile) and as a casual recreation facility inland by 1980. Development should include a "Classroom by the Sound" nature center, a fishing pier, and recreational ferry service from Oyster Bay and Fort Totten. Development inland should include the preservation and appropriate reuse of buildings, 200 campsites and 200 picnic sites.

Smithtown Bay:
1) Develop a public marina,
2) Construct a fish reef.

Sunken Meadow State Park: Develop a "Classroom by the Sound" nature center and a fishing pier.

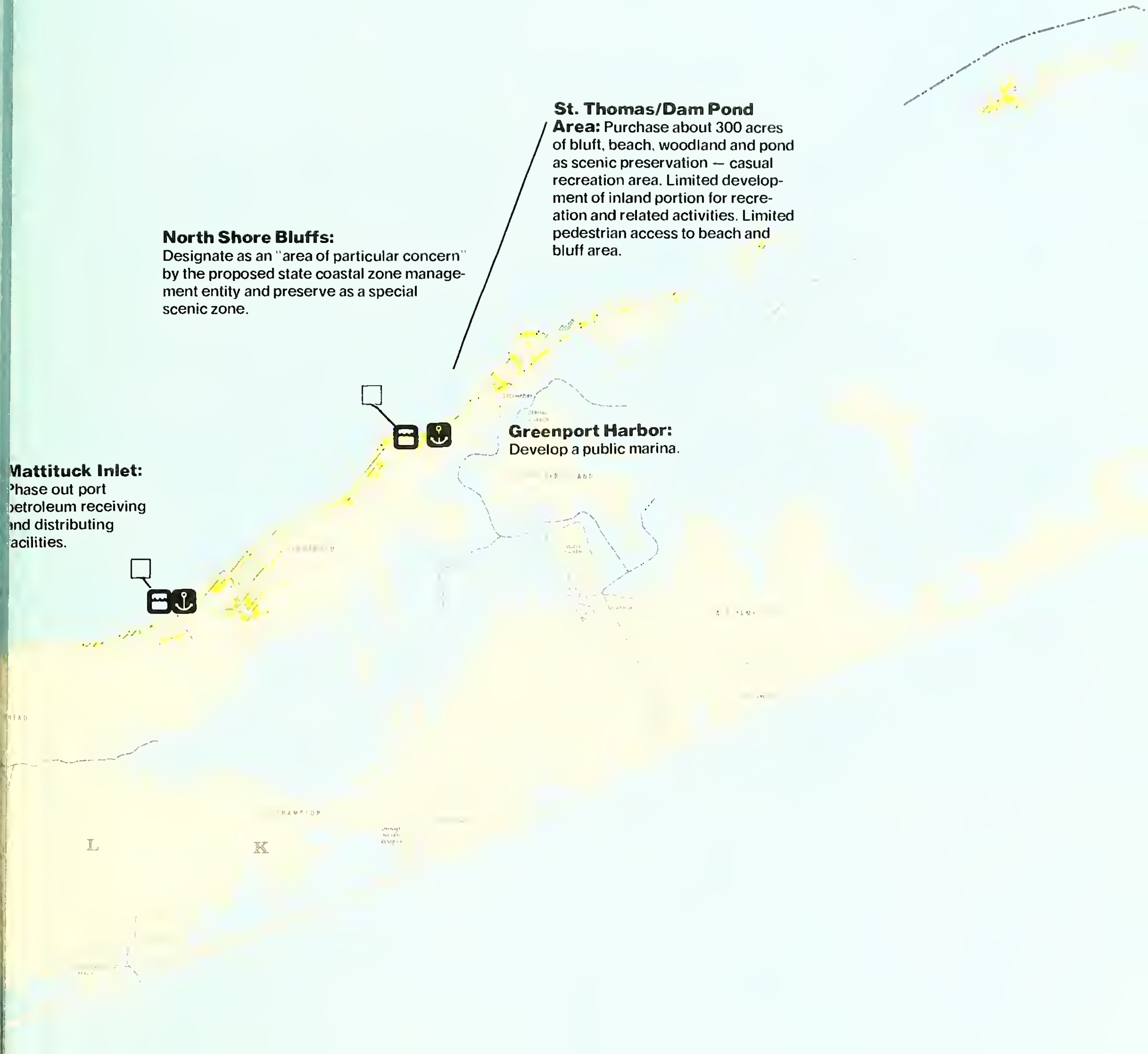
Plainview-Holtsville Pipeline: Extend existing pipeline east to Northville and west to mid-Nassau by 1980.

Mt. Sinai Harbor: Designate and preserve as a no-discharge water quality zone.

Port Jefferson Harbor:
1) Develop an offshore terminal for receipt of gasoline and home heating oil by 1985, with a submarine pipeline to an inland tank farm and Plainview-Holtsville pipeline.
2) Develop recreational ferry to sand spits (County park) at Harbor's mouth.
3) Develop a public marina.
4) Potential for private marina development.
5) Develop an artificial fish reef.

Roanoke Point: As part of the "Long Island Sound Heritage," purchase about 450 acres of beach, bluff, and woodlands as casual recreation/scenic preservation area. Limited development on inland portions for picnicking and related activities. Access to beach and bluff area limited to one or two pedestrian access points.

Subregion 7, 8 & 9
SUFFOLK COUNTY



St. Thomas/Dam Pond Area: Purchase about 300 acres of bluft, beach, woodland and pond as scenic preservation — casual recreation area. Limited development of inland portion for recreation and related activities. Limited pedestrian access to beach and bluff area.

North Shore Bluffs: Designate as an "area of particular concern" by the proposed state coastal zone management entity and preserve as a special scenic zone.

Greenport Harbor: Develop a public marina.

Mattituck Inlet: Phase out port petroleum receiving and distributing facilities.

THE LONG ISLAND SOUND STUDY TEAM

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**Howard Gates, Assistant State Conservationist, Soil Conservation Service, Connecticut

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Soil Conservation Service: John M. Allen; Charles R. Barnett, Jr.; Eudell F. Bivens; Donald G. Burbank; Whitney T. Ferguson; Ralph T. Grant; Robert Hilliard; Homer Hilner; Arthur Luce; Raymond Marshall; Richard J. McClimans; Elmer E. Offerman; DeElden A. Philbrook; James M. Reel; Edward H. Sautter

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*Joseph Ignazio, Chief, Basin Planning Branch
**Lawrence J. Bergen, Chief, Comprehensive River Basins Section

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National Weather Service: John H. Thomas.

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Douglas M. Costle, Commissioner, Connecticut Department of Environmental Protection (Member Steering Committee, to February 28, 1975)
Dan W. Lufkin, Commissioner, Connecticut Department of Environmental Protection (Member, Steering Committee, to June 30, 1973)
**Horace H. Brown, Director, Department of Finance and Control, Planning & Budgeting Division
*Richard M. Dowd, Director, Office of Planning and Research, Department of Environmental Protection
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Department of Transportation: Robert Gubala; Harry L. Siebert.

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*Walter Belter, Analysis and Assessment Programs, Division of Biomedical and Environmental Research
**Randolph Newton, Analysis and Assessment Programs, Division of Biomedical and Environmental Research

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**Martin Inwald, Chief, River Basins and Licensed Project Section
**Jonas Barish, Engineer

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*Frank V. Del Vecchio, Assistant Regional Administrator for Community Planning and Management
*Sheldon Gilbert, Environmental and Standards Officer, Office of Community Planning and Management

Marvin H. Krotenberg; Nick M. Nibi; David Prescott.

Consultant: Ralph M. Field and Associates.

Italics. Inactive

*New England River Basins Commission member, alternate
**Coordinating group member, alternate

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**J. David Breslin, Regional Coordinator, Northeast Region
**Kenneth B Young

Mark Abelson; Ellen Jensen.

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**Alan Mytelka, Assistant Chief Engineer

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**David Burack, Study Manager (to May, 1975)
**David L. Holmes, Senior Planner/Study Manager

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*Captain Royal E. Grover, Jr., Chief, Aids to Navigation Branch, 1st U.S. Coast Guard District

Commander Daniel Charter; Captain A. T. Durgin; *Commander C. R. Lindquist (deceased);* Captain Bernie E. Thompson.

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Mark V. Hughes.

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